



Pressure Calibration Equipment



2013 / 2014



ADDITEL CORPORATION

Additel Corporation is one of the leading worldwide providers of process calibration tools. We are dedicated to designing, manufacturing, and delivering the highest quality handheld test tools and portable calibrators for process and calibration industries. For many years Additel has successfully developed automated pressure calibrators, digital pressure test gauges, digital pressure calibrators, pressure test and calibration pumps, and multifunction process calibrators. Additel products are currently used in over 60 countries worldwide.

Product quality and customer service along with innovative engineering have been our top priorities and will continue to be our guiding principles going forward. We are committed to customer satisfaction through quality products, competitive pricing, unmatched services/technical support and continued introduction of new and innovative products.

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TABLE OF CONTENTS

Automated Pressure Calibrators

Automated Pressure Calibrators Selection Guide	01
Additel 761 Automated Pressure Calibrators	02

Digital Pressure Calibrators

Additel 672 Digital Pressure Calibrators	07
--	----

Digital Pressure Gauges

Additel 681 Digital Pressure Gauges	10
Additel 680 Digital Pressure Gauges	13

Multifunction Process Calibrators

Multifunction Process Calibrators Selection Guide	15
Additel 220 Multifunction Loop Calibrator	16
Additel 221A Multifunction Temperature Calibrator	18
Additel 222A Multifunction Process Calibrator	21
Additel 223A Documenting Process Calibrator	24

Digital Pressure Modules

Additel 160 Series Intelligent Digital Pressure Modules	27
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Pressure Test/Calibration Pumps

Pressure Test/Calibration Pumps Selection Guide	29
Additel 901 Low Pressure Test Pump	30
Additel 912 Low Pressure Test Pump	31
Additel 914 Handheld Pneumatic Pressure Test Pump	32
Additel 916 Pneumatic Pressure Test Pump	33
Additel 917 Pneumatic Pressure Test Pump	34
Additel 918 Pneumatic Pressure Test Pump	35
Additel 919A Pneumatic High Pressure Test Pump	36
Additel 920 Pneumatic High Pressure Test Pump	37
Additel 925 Handheld Hydraulic Pressure Test Pump	38
Additel 927 Hydraulic Pressure Test Pump	39
Additel 936 Hydraulic High Pressure Calibration Pump	40
Additel 937 Hydraulic High Pressure Calibration Pump	41
Additel 938 Hydraulic High Pressure Calibration Pump	42
Additel 949 Hydraulic Ultra-high Pressure Calibration Pump	43

Pressure Manifolds, Hoses, Adapters and Fittings.....

Software.....

Additel 761

Automated Pressure Calibrators

Selection Guide

Model Features	NEW			NEW		NEW	NEW	NEW	NEW
	761-LLP	761-D	761-L	761-LA	761-M	761-MA	761-H	761-HA	761-BP
Pressure Range	-25 to 25 mbar (-10 to 10 inH ₂ O)	-0.95 to 1 bar (-13.5 to 15 psi)	-0.95 to 7 bar (-13.5 to 100 psi)	0.05 to 8 bar.a (1.2 to 115 psi.a)	-0.90 to 25 bar (-13 to 375 psi)	0.1 to 26 bar.a (1.7 to 390 psi.a)	-0.90 to 40 bar (-13 to 600 psi)	0.1 to 41 bar.a (1.7 to 615 psi.a)	100 to 1200 hPa
Pressure Module 1	-2.5 to 2.5 mbar (-1 to 1 inH ₂ O)	-25 to 25 mbar (-10 to 10 inH ₂ O)	-0.95 to 2.5 bar (-13.5 to 35 psi)	0.05 to 3.5 bar.a (1.2 to 50 psi.a)	-0.9 to 2.5 bar (-13 to 35 psi)	0.1 to 3.5 bar.a (1.7 to 50 psi.a)	-0.9 to 2.5 bar (-13 to 35 psi)	0.1 to 3.5 bar.a (1.7 to 50 psi.a)	100 to 1200 hPa
Pressure Module 2	-25 to 25 mbar (-10 to 10 inH ₂ O)	-0.95 to 1 bar (-13.5 to 15 psi)	0 to 7 bar (0 to 100 psi)	0.05 to 8 bar.a (1.2 to 115 psi.a)	0 to 25 bar (0 to 375 psi)	0.1 to 26 bar.a (1.7 to 390 psi.a)	0 to 40 bar (0 to 600 psi)	0.1 to 41 bar.a (1.7 to 615 psi.a)	NA
Differential Pressure	●	●							
Gauge Pressure	●	●	●	●	●	●	●	●	
Absolute Pressure				●		●		●	●
Barometric Pressure				●		●		●	●
Temperature Compensated	●	●	●	●	●	●	●	●	●
Built-in Electrical Pump	●	●	●	●	●	●	●	●	●
Built-in Filter	●	●	●	●	●	●	●	●	●
Built-in Liquid Trap	●	●	●	●	●	●	●	●	●
Source 0 to 22mA	●	●	●	●	●	●	●	●	●
Measure mA or V	●	●	●	●	●	●	●	●	●
Measure external pressure module	●	●	●	●	●	●	●	●	●
24V Loop power	●	●	●	●	●	●	●	●	●
Pressure switch test	●	●	●	●	●	●	●	●	●
HART Communication	●	●	●	●	●	●	●	●	●
Documenting	●	●	●	●	●	●	●	●	●



NEW
UPDATED



- Fully automated pressure calibrator with built-in pressure generator / controller to as high as 600 psi (40 bar) or as low as 0.01 Pa (0.00004 inH₂O)
- 0.02%FS accuracy
- Dual pressure modules
- Built-in filter and liquid trap with venting system prevents contamination of the calibrator
- Portable (12.4 lb)

OVERVIEW

With a built-in high performance electronic pump and precision pressure controller, the 761 series portable automated pressure calibrators provide a turn-key solution for calibration of gauges, transmitters, and switches both in the field and in the laboratory. In a portable package, this calibrator can automatically generate pressures from 90% vacuum to 600 psi (40 bar) with 0.005% FS pressure control stability and 0.02% FS accuracy. To improve the calibrator accuracy, two pressure modules with differing ranges are built-in and integrated with the internal pump and controller.

The 761-LLP is specially designed for low pressure calibration, and pressures as low as 0.01 Pa (0.00004 inH₂O) can be automatically generated and controlled.

The 761-BP is designed for barometric gauge calibration. With a quartz pressure sensor, the accuracy of 761-BP can achieve 0.01%FS accuracy.

With optional external pressure modules (160 series), the 761 can measure pressures up to 10,000 psi (700 bar) with 0.025%FS accuracy. In addition to the pressure generation, control, and measurement capabilities, the 761 also features HART communication capability, supplies 24V loop power, and reads the current or voltage produced by the pressure transducers. The 761 is a state of the art automated pressure calibrator which brings automated pressure calibration to the field.

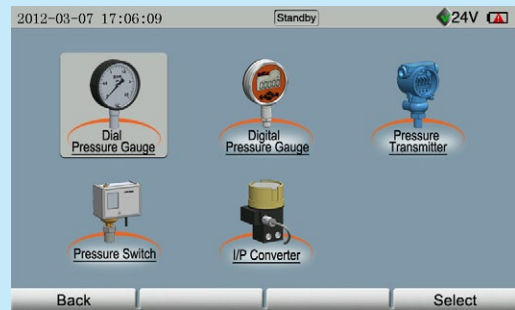
FEATURES

- **Pressure Range**
Pressure generated by built-in pump and controlled automatically from 90% vacuum to 600 psi (40 bar)
Pressure measured with external pressure modules (160 series) to 10,000 psi (700 bar)
- **Accuracy (Fully temperature compensated)**
0.02%FS
0.05%FS (ADT761-LLP)
0.01%FS (ADT761-BP)
- **Control Stability**
<0.005%FS
ADT761-LLP: < 0.05 Pa (0.0002 inH₂O)
- **Contamination prevention system**
Built-in filter and liquid trap with venting system prevent contamination of the calibrator
Solid particles can be blocked by built-in filter
A small amount of Liquid can be collected by the built-in liquid trap
Both solid particles and liquid can be blown out through the venting system
- **Automation and Test Program**
Fully Automated pressure calibration
Task preset and auto run
Auto step
- **Easy to Use**
User friendly interface
Intuitive icon driven menu structure
- **Sourcing and Measuring electrical signals**
Measure mA or V with 0.01% RD + 0.005%FS accuracy
Source/sink 0 to 22mA current
24 VDC loop power supplied to pressure transmitter during test
Automated switch test
- **Misuse Protection**
Up to 30V misuse protection on any two sockets
- **Display**
7" LCD color screen (800X480)
- **Documenting and data logging**
Task management capability
Internal memory stores 200 tasks
Download tasks and upload results
- **HART Communication capability**
Support HART instrumentation
- **Rechargeable battery:**
Rechargeable battery with up to 8 hours operation between charges
- **Leak testing:**
Apply leak test to an external pressure system to determine the magnitude of pressure variations due to leaks
- **Pipeline Protection:** Special design the pipeline layout to avoid possible blockage and leakage
- **Portable:** Only 12.4 lb
- **Multi Lingual Interface**
English, German, French, Italian, Spanish, Portuguese, Simplified Chinese
(Traditional Chinese, Japanese and Russian are available per request)
- **NIST Traceable:** NIST traceable calibration with data (included)



SPECIFICATIONS

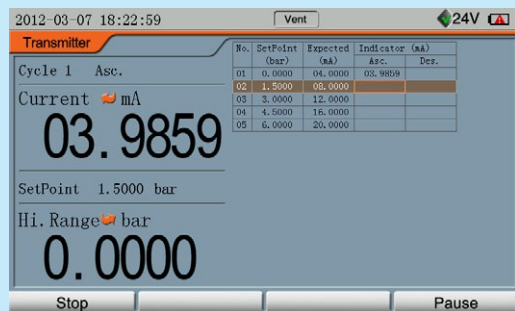
- **Control Stability**
 $<0.005\%FS$;
 ADT761-LLP: $<0.05\text{ Pa}$ ($0.0002\text{ inH}_2\text{O}$)
- **Pressure Connections**
 G1/8 Female on calibrator
 Two 1/4NPT(or 1/2NPT, 1/4BSP, M20x1.5) female hand-tight connectors on the external pressure manifold (included)
- **External Pressure Module Connection**
 External pressure module connector
- **Electrical Connection**
 0.156 inch (4mm) banana sockets
- **Documenting and data logging**
 Task management capability
 Internal memory stores 200 tasks
 Download tasks and upload results
- **Display**
 7" LCD color screen (800x480)
 Display rate: 5 readings per second
- **Pressure Units**
 Pa, kPa, MPa, psi, bar, mbar, $\text{inH}_2\text{O}@4^\circ\text{C}$, $\text{mmH}_2\text{O}@4^\circ\text{C}$, $\text{inH}_2\text{O}@20^\circ\text{C}$, $\text{mmH}_2\text{O}@20^\circ\text{C}$, $\text{inHg}@0^\circ\text{C}$, $\text{mmHg}@0^\circ\text{C}$, kgf/cm^2 , and hPa (ADT761-BP)
- **Power**
 Battery: Rechargeable Li-ion Polymer battery (included)
 Li-Battery working time: ~8 hours
 Recharge time: ~3 hours
 External Power: 110/220V Power adapter (DC 27 V) (Included)
- **Environmental Specification:**
 Operating temperature: 32°F to 122°F (0°C to 50°C)
 Compensated Temperature: 32°F to 122°F (0°C to 50°C)
 Storage temperature: -20°C to 60°C
 Humidity: $<90\%$, non-condensing
- **European Compliance:** CE Marked
- **Communication**
 RS232 (DB9/F, environmentally sealed)
 Baud rate: 2400, 4800, 9600, 19200, 38400, 57600, 115200
 Data length: 7 Bits, 8 Bits
 Stop bit: 1 Bit, 2 Bits
 Address: from 1 to 121
- **Dimension**
 11.65" X 7.32" X 7.09"(296mm X186mm X180mm)
- **Weight:** 12.4 lb (5.6 kg)
- **Warranty:** 18 months



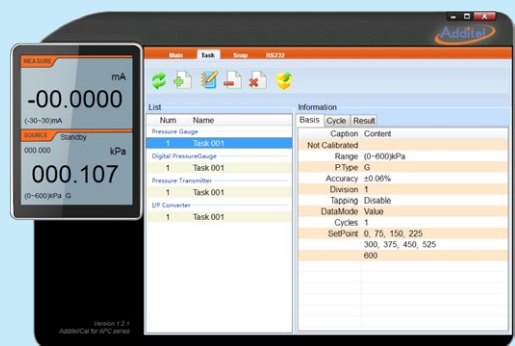
Task Manual



Built-in User's Manual



Pressure gauge / transmitter / switch calibration



Documenting

Additel 761

Automated Pressure Calibrators



SPECIFICATIONS

■ Pressure Ranges

Type	Model	Pressure Range	Pressure Module 1		Pressure Module 2	
			Range	Accuracy	Range	Accuracy
Low/Differential Pressure	ADT761-LLP	-25 to 25 mbar (-10 to 10 inH ₂ O)	-2.5 to 2.5 mbar (-1 to 1 inH ₂ O)	0.05%FS	-25 to 25 mbar (-10 to 10 inH ₂ O)	0.05%FS
	ADT761-D	-0.95 to 1 bar (-13.5 to 15 psi)	-25 to 25 mbar (-10 to 10 inH ₂ O)	0.05%FS	-0.95 to 1 bar (-13.5 to 15 psi)	0.02%FS
Gauge Pressure	ADT761-L	-0.95 to 7 bar (-13.5 to 100 psi)	-0.95 to 2.5 bar (-13.5 to 35 psi)	0.02%FS	0 to 7 bar (0 to 100 psi)	0.02%FS
	ADT761-M	-0.90 to 25 bar (-13 to 375 psi)	-0.9 to 2.5 bar (-13 to 35 psi)	0.02%FS	0 to 25 bar (0 to 375 psi)	0.02%FS
	ADT761-H	-0.90 to 40 bar (-13 to 600 psi)	-0.9 to 2.5 bar (-13 to 35 psi)	0.02%FS	0 to 40 bar (0 to 600 psi)	0.02%FS
Gauge/Absolute Pressure	ADT761-LA	-0.95 to 7 bar (-13.5 to 100 psi)	-0.95 to 2.5 bar (-13.5 to 35 psi)	0.02%FS	-0.95 to 7 bar (-13.5 to 100 psi)	0.02%FS
		0.05 to 8 bar.a (1.2 to 115 psi.a)	0.05 to 3.5 bar.a (1.2 to 50 psi.a)	0.03%FS	0.05 to 8 bar.a (1.2 to 115 psi.a)	0.025%FS
	ADT761-MA	-0.90 to 25 bar (-13 to 375 psi)	-0.9 to 2.5 bar (-13 to 35 psi)	0.02%FS	-0.9 to 25 bar (-13 to 375 psi)	0.02%FS
		0.1 to 26 bar.a (1.7 to 390 psi.a)	0.1 to 3.5 bar.a (1.7 to 50 psi.a)	0.03%FS	0.1 to 26 bar.a (1.7 to 390 psi.a)	0.025%FS
	ADT761-HA	-0.90 to 40 bar (-13 to 600 psi)	-0.9 to 2.5 bar (-13 to 35 psi)	0.02%FS	-0.9 to 40 bar (-13 to 600 psi)	0.02%FS
		0.1 to 41 bar.a (1.7 to 615 psi.a)	0.1 to 3.5 bar.a (1.7 to 50 psi.a)	0.03%FS	0.1 to 41 bar.a (1.7 to 615 psi.a)	0.025%FS
Barometric pressure	ADT761-BP	100 to 1,200 hPa	100 to 1,200 hPa	0.01%FS	NA	NA

* One year accuracy (including yearly stability) except ADT761-LLP which is 0.05%FS calibration accuracy and 0.05%FS yearly stability.

** Additel 761 calibrators support 160 series intelligent digital pressure modules that are available for gauge, vacuum and absolute pressure from -15 psi to 10,000 psi (-1 bar to 700 bar). Accuracy from 0.025%FS includes operation over 14°F to 122°F (-10°C to 50°C), one year stability and calibration uncertainty. For detailed specification refer to 160 series pressure modules datasheet.

■ Electrical Measurement and Source Accuracy

	Range	Resolution	Accuracy
Voltage Measurement	±30.0000V	0.1mV	±(0.01%RD + 0.005%FS)
Current Measurement	±30.0000mA	0.1uA	±(0.01%RD + 0.005%FS)
Current Source	0.000 to 22.000mA	1uA	±(0.02%RD + 0.01%FS)
Switch Test	If the switch has detective Voltage, the range is from 3V to 24V		
DC 24V output	24V ± 0.5V, 50mA		

Additel 761

Automated Pressure Calibrators



ORDERING INFORMATION

Model Number

ADT761 — L — N

Pressure range D/L/M:
See pressure range
table.

Pressure port type on External
Pressure Manifold:
N- 1/4NPT female
N2- 1/2NPT female
B- 1/4BSP female
M-M20X1.5 female



Accessories (included)		
External Pressure Manifold (ADT106) (Except 761-LLP)	1 pc	
9818 110V/220V external Power adapter	1 pc	
9722 Chargeable Li-ion battery	1 pc	
9022 Test Leads for calibrator	2 sets (4 pcs)	
9020 Short circuit cable	1 set (2 pcs)	
9907 Carrying case for 761 calibrator and accessory	1 pc	
9060 Pressure module connection cable	1 pc	
O-rings(Except 761-LLP)	20 pcs	
Manual	1 pc	
Tools	1 set	
Hose	2 pcs	
NIST traceable calibration certificate	1 pc	

Optional Accessories		
Model Number	Description	Picture
ADT100-761-4N	Hose Test Kit, 5 feet flexible hose, 0.156" (4mm) tube to 1/4NPT hand-tight quick connector	
ADT100-761-4B	Hose Test Kit, 5 feet flexible hose, 0.156" (4mm) tube to 1/4BSP hand-tight quick connector	
ADT106-N	External Pressure Manifold (with two 1/4NPT hand-tight quick connectors)	
ADT106-B	External Pressure Manifold (with two 1/4BSP hand-tight quick connectors)	
ADT106-M	External Pressure Manifold (with two M20X1.5 hand-tight quick connectors)	
ADT160	Pressure modules (please check Additel 160 datasheet)	
9060	Pressure module connection cable	

* Additel/Land software could be downloaded for free at www.additel.com

Additel 672

Digital Pressure Calibrators



- Pressure ranges to 36,000 psi (2500 bar)
- HART Communication capability
- Measure mA or V, and with 24V loop power
- Easy-to-use, inexpensive pressure calibrator with uncertainty better than 0.025%FS



Gauge pressure

Differential pressure

OVERVIEW

With advanced microprocessor technology and state-of-the-art silicon pressure sensors, the 672 series precision pressure calibrators provide a pressure calibration solution for gauges, transmitters, and switches over a wide pressure range. The 672 is a very portable device and can measure pressure precisely with a built-in pressure sensor, as well as read the current or mV produced by a transducer. It can even supply an excitation voltage to power sensors or transmitters during calibration. In order to reach 0.025% F. S. accuracy up to 10,000 psi (700 bar) and 0.1% F. S. accuracy up to 36,000 psi (2,500 bar), every silicon pressure sensor in our gauges has been specially aged, tested and screened before assembly. The 672 series precision pressure calibrators are unmatched in performance and reliability.

FEATURES

- Pressure measurement uncertainty:
ADT672-02: 0.025% FS
ADT672-05: 0.05% FS
- Pressure ranges to 36,000 psi (2500 bar)
- Measure mA or V with 0.02% RD + 0.003%FS accuracy
- Power transmitters during test using 24V loop supply
- Pressure switch test
- HART Communication capability
- Advanced temperature compensation
- Dual readout
- Min/Max/Hold to capture changing measurements
- Data logging
- Large, easy to read display with 6-digit resolution
- Backlit display
- Rechargeable battery or AC adapter
- NIST traceable calibration with data (Included)

SPECIFICATIONS

- **Accuracy**
ADT672-02: 0.025% of full scale
ADT672-05: 0.05% of full scale
- **Gauge Types**
Gauge pressure
Compound Pressure
Absolute pressure
Differential pressure
- **Display**
Description: Dual-line 6 full digit FSTN LCD with LED Backlight
Display rate: 3.5 readings per second (Default setting)
Numeral display height: 16.5mm (0.65")
- **Pressure Units**
Pa, kPa, MPa, psi, bar, mbar, inH₂O@4°C, mmH₂O@4°C, inHg@0°C, mmHg@0°C, kgf/cm²
- **Environmental**
Compensated Temperature: 14°F to 122°F (-10°C to 50°C)
Operating Temperature*: 14°F to 122°F (-10°C to 50°C)
*0.025%FS accuracy guaranteed only over the ambient temperature range of 68°F to 79°F (20°C to 26°C)
Storage Temperature: -4°F to 158°F (-20°C to 70°C)
Humidity: <95%

SPECIFICATIONS

■ Pressure Ranges

Gauge Pressure^[1]					
P/N	Pressure Range (psi)	Pressure Range (bar)	Media ^[2]	Accuracy(%FS)	Burst Pressure
V15	-15	-1.0	G	0.025 (0.05)	3 X
GP2	2	0.16	G	0.05	3 X
GP5	5	0.35	G	0.025 (0.05)	3 X
GP10	10	0.7	G	0.025 (0.05)	3 X
GP15	15	1.0	G,L ^[3]	0.025 (0.05)	3X
GP30	30	2.0	G,L ^[3]	0.025 (0.05)	3X
GP50	50	3.5	G,L	0.025 (0.05)	3X
GP100	100	7.0	G,L	0.025 (0.05)	3X
GP300	300	20	G,L	0.025 (0.05)	3X
GP500	500	35	G,L	0.025 (0.05)	3X
GP600	600	40	G,L	0.025 (0.05)	3X
GP1K	1,000	70	G,L	0.025 (0.05)	3X
GP2K	2,000	140	G,L	0.025 (0.05)	3X
GP3K	3,000	200	G,L	0.025 (0.05)	3X
GP5K	5,000	350	G,L	0.025 (0.05)	3X
GP10K	10,000	700	G,L	0.025 (0.05)	2X
GP15K	15,000	1,000	G,L	0.05(0.1)	2X
GP25K	25,000	1,600	G,L	0.1	1.5X
GP30K	30,000	2,000	G,L	0.1	1.5X
GP36K	36,000	2,500	G,L	0.1	1.5X

Note: [1]. Sealed gauge pressure for above 1000 psi

[2]. G=Gas, L=Liquid (please specify media type when place order)

[3]. 0.025% FS for gas media only

Compound Pressure					
P/N	Pressure Range (psi)	Pressure Range (bar)	Media	Accuracy(%FS)	Burst Pressure
CP2	±2	±0.16	G	0.05	3X
CP5	±5	±0.35	G	0.025 (0.05)	3X
CP10	±10	±0.7	G	0.025 (0.05)	3X
CP15	±15	±1	G	0.025 (0.05)	3X
CP30	-15 to 30	-1 to 2	G	0.025 (0.05)	3X
CP100	-15 to 100	-1 to 7	G,L	0.025 (0.05)	3X
CP300	-15 to 300	-1 to 20	G,L	0.025 (0.05)	3X

Absolute Pressure					
P/N	Pressure Range (psi)	Pressure Range (bar)	Media ^[2]	Accuracy(%FS)	Burst Pressure
AP5	5	0.35	G	0.1	3X
AP10	10	0.7	G	0.1	3X
AP15	15	1.0	G	0.1	3X
AP30	30	2.0	G	0.1	3X
AP50	50	3.5	G	0.1	3X
AP100	100	7.0	G , L	0.1	3X
AP300	300	20	G , L	0.1	3X
AP500	500	35	G , L	0.1	3X
AP1K	1,000	70	G , L	0.1	3X
AP3K	3,000	200	G , L	0.1	3X
AP5K	5,000	350	G , L	0.1	3X

Differential Pressure					
P/N	Pressure Range (inH ₂ O)	Pressure Range (mbar)	Media	Accuracy(%FS)	Burst Pressure
DP1	±1	±2.5	G	0.05	100X
DP2	±2	±5.0	G	0.05	100X
DP5	±5	±10	G	0.05	50X
DP10	±10	±25	G	0.05	20X
DP20	±20	±50	G	0.05	20X
DP30	±30	±75	G	0.05	20X
DP50	±50	±160	G	0.05	3X
DP150	±150	±350	G	0.025	3X
DP300	±300	±700	G	0.025	3X

Electrical Measurement and Source Accuracy		
	Range	Accuracy
Voltage DC	±30.0000V	± (0.02%RD+0.003%FS)
Current DC	±30.0000mA	± (0.02%RD+0.003%FS)
DC 24V	24V±0.5V max:50mA Protect at: 120mA	
Switch ^[1]	Status OPEN/CLOSED	

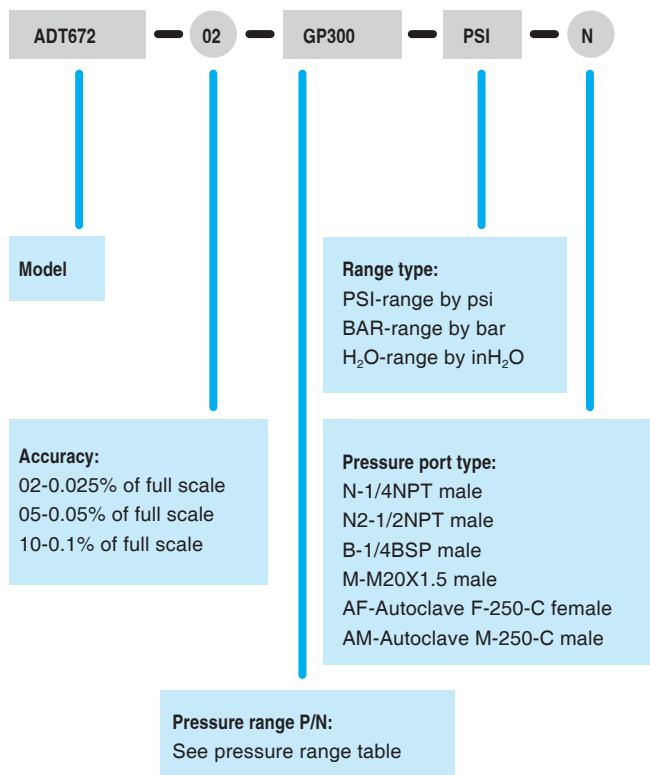
Note: [1] 1V~12V if switch has detective voltage

SPECIFICATIONS

- **Pressure Connections**
 1/4NPT male, 1/4BSP male, M20X1.5 male ($\leq 15,000$ psi)
 1/4HP female or 1/4HP male ($>15,000$ psi)
 1/4HP female: Autoclave F-250-C, 9/16" - 18 UNF-2B
 1/4HP male: Autoclave M-250-C, 9/16" - 18 UNF-2A
 0.236 inch ($\varnothing 6$ mm) test hose (for differential pressure)
 Other connections available per request
- **Electrical Connection**
 0.156 inch ($\varnothing 4$ mm) sockets
- **Over Pressure Warning:** 120%
- **Data Logger**
 Storage capacity: 30 files, 40 records per file
 Mode: manual and automatic
 Hourly-record: record the data every hour
 Interval-record: set by user
- **Power**
 Battery: Rechargeable Li-ion polymer battery
 Li-Battery working time: 40 hours
 Recharge time: 4 hours
 External power: 110V/220V power adapter (DC10V)
- **Enclosure**
 Case material: Aluminum alloy
 Wetted parts: 316L SS
 Dimension: $\varnothing 120$ mm X 46mm depth X 184mm height
 Weight: 0.7kg
- **European Compliance:** CE marked
- **Communication**
 RS232 (DB9/F, environmentally sealed)
 Baud rate: 1200,2400,4800,9600
 Data length: 8 bits
 Stop bit: 2 bits
 Address: from 1 to 112
- **Warranty:** 1 year

ORDERING INFORMATION

■ Model Number



- **Accessories included**
 110V/220V external power adapter (DC 10V)
 2 pieces 1.5-meter test leads
 2 pieces 0.236 inch ($\varnothing 6$ mm) test hose (for differential pressure gauge only)
 Additel/Land software (free download at www.additel.com)
 Manual
 NIST traceable calibration certificate

■ Optional Accessories

Model number	Description
9702	Spare rechargeable Li-ion polymer battery for 672
9814	Spare 110V/220V external power adapter (DC 10V) for 672 digital pressure calibrator
9502	Additel/Log II real time data logging and graphical software for 681 and 672
9506	Additel/PCal pressure calibration software
9050	USB to RS232 (DB9/M) Adapter
9900-672	Carrying Case for one 672 digital pressure gauge
9021	Spare 2 pieces test leads (1.5-meter) for 672

Digital Pressure Gauges

- Pressure ranges to 36,000 psi (2500 bar)
- 0.025%, 0.05%, 0.1% or 0.2% FS accuracy
- % pressure indication with fan-shaped graph scale for visual reference
- Fully temperature compensated accuracy
- Panel mount gauges are available



Gauge pressure

Differential pressure

OVERVIEW

With advanced microprocessor technology and state-of-the-art silicon pressure sensors, the 681 series digital pressure gauges provide an accurate, reliable, and economic solution for a wide range of pressure applications. They are loaded with functionality and remarkably easy to use. To reach the best performance, every silicon pressure sensor in our gauges is specially aged, tested and screened before assembly. The 681 series digital pressure gauges are unmatched in performance and reliability. Best of all, they are very affordable

FEATURES

- Pressure ranges to 36,000 psi (2500 bar)
- 0.025% full scale accuracy (681-02)
- 0.05% full scale accuracy (681-05)
- 0.1% full scale accuracy (681-10)
- 0.2% full scale accuracy (681-20)
- Fully temperature compensated accuracy from 14°F to 122°F (-10°C to 50°C)
- Up to eleven selectable pressure units
- Large, easy to read display with 5-digit resolution
- Backlit display
- % pressure indication with fan-shaped graph scale for visual reference
- Display flash warning when pressure over 120% of FS
- Bottom mount or panel mount
- ATEX certified intrinsically safe (Model 681IS)
- NIST traceable calibration with data (included)
- 9V battery power or AC adapter (optional)

SPECIFICATIONS

- **Model**
ADT681: Regular gauge
ADT681IS: ATEX certified intrinsically safe
- **Accuracy**
681(IS)-02: 0.025% of full scale
681(IS)-05: 0.05% of full scale
681(IS)-10: 0.1% of full scale
681(IS)-20: 0.2% of full scale
(For detailed accuracy, please see pressure range table)
- **Gauge Types**
Gauge pressure
Compound pressure
Absolute pressure
Differential pressure
- **Fan-shaped Graph Scale**
Similar to analog dials, including pressure swing, % indication with fan-shaped graph scale for visual reference, low/high alarm.
- **Display**
Description: 5 full digit FSTN LCD
Display rate: 3 readings per second (Default setting).
Adjustable from 10 readings per second to 1 reading every ten seconds
Numeral display height: 16.5mm (0.65")

SPECIFICATIONS

■ Pressure Units

Pa, kPa, MPa, psi, bar, mbar, kgf/cm², inH₂O@4°C mmH₂O@4°C, inHg@0°C, mmHg@0°C

■ Environmental

Compensated Temperature: 14°F to 122°F (-10°C to 50°C)

Operating Temperature*: 14°F to 122°F (-10°C to 50°C)

*0.025%FS accuracy guaranteed only over the ambient temperature range of 68°F to 79°F (20°C to 26°C)

Storage Temperature: -4°F to 158°F (-20°C to 70°C)

Humidity: <95%



681 with rubber boot

■ Pressure Ranges

Gauge Pressure ^[1]					
P/N	Pressure Range (psi)	Pressure Range (bar)	Media ^[2]	Accuracy(%FS)	Burst Pressure
V15	-15	-1.0	G	0.025 (0.05, 0.1, 0.2)	3 X
GP2	2	0.16	G	0.05 (0.1, 0.2)	3 X
GP5	5	0.35	G	0.025 (0.05, 0.1, 0.2)	3 X
GP10	10	0.7	G	0.025 (0.05, 0.1, 0.2)	3 X
GP15	15	1.0	G,L ^[3]	0.025 (0.05, 0.1, 0.2)	3 X
GP30	30	2.0	G,L ^[3]	0.025 (0.05, 0.1, 0.2)	3 X
GP50	50	3.5	G,L	0.025 (0.05, 0.1, 0.2)	3 X
GP100	100	7.0	G,L	0.025 (0.05, 0.1, 0.2)	3 X
GP300	300	20	G,L	0.025 (0.05, 0.1, 0.2)	3 X
GP500	500	35	G,L	0.025 (0.05, 0.1, 0.2)	3 X
GP600	600	40	G,L	0.025 (0.05, 0.1, 0.2)	3 X
GP1K	1,000	70	G,L	0.025 (0.05, 0.1, 0.2)	3 X
GP2K	2,000	140	G,L	0.025 (0.05, 0.1, 0.2)	3 X
GP3K	3,000	200	G,L	0.025 (0.05, 0.1, 0.2)	3 X
GP5K	5,000	350	G,L	0.025 (0.05, 0.1, 0.2)	3 X
GP10K	10,000	700	G,L	0.025 (0.05, 0.1, 0.2)	2 X
GP15K	15,000	1,000	G,L	0.05 (0.1,0.2)	2 X
GP25K	25,000	1,600	G,L	0.1 (0.2)	1.5 X
GP30K	30,000	2,000	G,L	0.1 (0.2)	1.5 X
GP36K	36,000	2,500	G,L	0.1 (0.2)	1.5 X

Compound Pressure					
P/N	Pressure Range (psi)	Pressure Range (bar)	Media	Accuracy(%FS)	Burst Pressure
CP2	±2	±0.16	G	0.05(0.1,0.2)	3 X
CP5	±5	±0.35	G	0.025(0.05,0.1,0.2)	3 X
CP10	±10	±0.7	G	0.025(0.05,0.1,0.2)	3 X
CP15	±15	±1	G	0.025(0.05,0.1,0.2)	3 X
CP30	-15 to 30	-1 to 2	G	0.025(0.05,0.1,0.2)	3 X
CP100	-15 to 100	-1 to 7	G, L	0.025(0.05,0.1,0.2)	3 X
CP300	-15 to 300	-1 to 20	G, L	0.025(0.05,0.1,0.2)	3 X

Absolute Pressure					
P/N	Pressure Range (psi)	Pressure Range (bar)	Media	Accuracy(%FS)	Burst Pressure
AP5	5	0.35	G	0.1 (0.2)	3 X
AP10	10	0.7	G	0.1 (0.2)	3 X
AP15	15	1.0	G	0.1 (0.2)	3 X
AP30	30	2.0	G	0.1 (0.2)	3 X
AP50	50	3.5	G	0.1 (0.2)	3 X
AP100	100	7.0	G, L	0.1 (0.2)	3 X
AP300	300	20	G, L	0.1 (0.2)	3 X
AP500	500	35	G, L	0.1 (0.2)	3 X
AP1K	1,000	70	G, L	0.1 (0.2)	3 X
AP3K	3,000	200	G, L	0.1 (0.2)	3 X
AP5K	5,000	350	G, L	0.1 (0.2)	3 X

Differential Pressure					
P/N	Pressure Range (inH ₂ O)	Pressure Range (mbar)	Media	Accuracy(%FS)	Burst Pressure
DP1	±1	±2.5	G	0.05	100X
DP2	±2	±5.0	G	0.05	100X
DP5	±5	±10	G	0.05	50X
DP10	±10	±25	G	0.05	20X
DP20	±20	±50	G	0.05	20X
DP30	±30	±75	G	0.05	20X
DP50	±50	±160	G	0.05	3X
DP150	±150	±350	G	0.025(0.05)	3X
DP300	±300	±700	G	0.025(0.05)	3X

Note: [1]. Sealed gauge pressure for above 1000 psi

[2]. G=Gas, L=Liquid (please specify media type when place order)

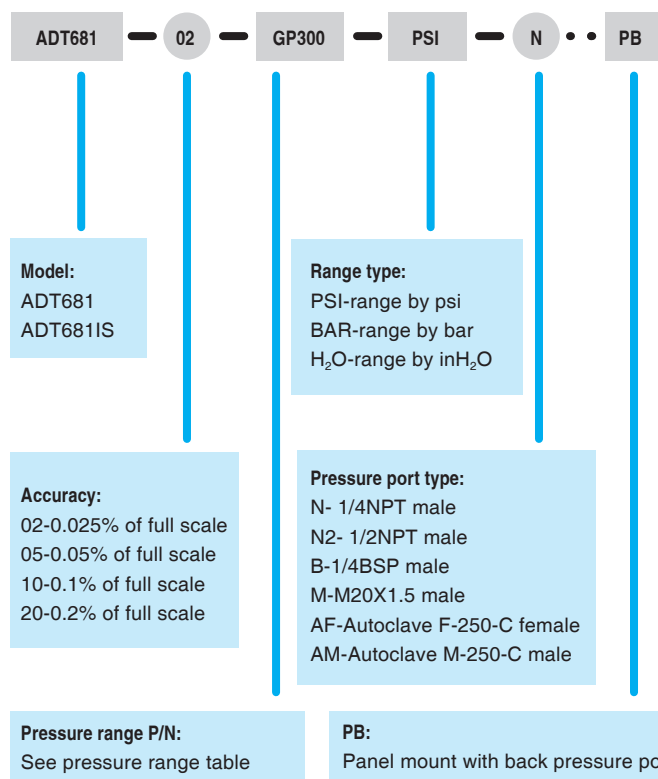
[3]. 0.025% FS for gas media only

SPECIFICATIONS

- **Pressure Port**
 1/4NPT male, 1/4BSP male, M20×1.5 male ($\leq 15,000$ PSI)
 1/4HP female or 1/4HP male ($\geq 15,000$ PSI)
 *1/4HP female: Autoclave F-250-C, 9/16" - 18 UNF-2B
 *1/4HP male: Autoclave M-250-C, 9/16" - 18 UNF-2A
 0.236 inch ($\varnothing 6$ mm) test hose (for differential pressure)
 Other connections available per request
- **Power**
 Battery: One 9V alkaline battery (included)
 Battery life: 300 hours (10 readings/s), 600 hours (3 reading/s), or 6000 hours (1 reading/10s)
 Power auto-off: 60 minutes power auto-off. Auto-off may be disable
 External power: 110/220V external power adapter (optional)
 *(Do not use the external power adapter in a hazardous atmosphere)
- **Enclosure**
 Case material: Aluminum alloy
 Wetted parts: 316L SS
 Dimension:
 $\varnothing 110\text{mm}$ X 35mm depth X 176mm height
 (panel mount gauge: $\varnothing 140\text{mm}$ X 86mm depth)
 Weight: 0.6kg
- **Intrinsic Safety and European Compliance**
 CE marked
 ATEX certified intrinsically safe (ADT681IS)
- **Communication: RS232**
 *(Do not use the RS-232 connector in a hazardous atmosphere)
- **Warranty: 1 year**

ORDERING INFORMATION

■ Model Number



681 Panel mount with back pressure port

- **Accessories included**
 Rubber boot (Except panel mount gauges)
 9V alkaline battery (1 pc)
 Manual
 NIST traceable calibration certificate

■ Optional Accessories

Model number	Description
9812	110V/220V external power adapter (DC 9V) for 681 digital pressure gauge.
9502	Additel/Log II real time data logging and graphical software for 681 and 672.
9506	Additel/PCal pressure calibration software
9050	USB to RS232 (DB9/M) Adapter
9900-681	Carrying Case for one 681 digital pressure gauge

Additel 680

Digital Pressure Gauges

- Pressure ranges to 10,000 psi (700 bar)
- 0.25%FS accuracy
- Fully temperature compensated accuracy
- IP67
- Data logging and wireless (Optional model)



OVERVIEW

With advanced microprocessor technology and state-of-the-art silicon pressure sensors, the 680 series digital pressure gauges provide an accurate, reliable, and economic solution for a wide range of pressure applications. They are loaded with functionality and remarkably easy to use. To reach the best performance, every silicon pressure sensor in our gauges is specially aged, tested and screened before assembly. With data logging and wireless features, the 680W gauge can store pressure measurement data in the internal memory or display them on PC through wireless communication. The 680 series digital pressure gauges are unmatched in performance and reliability. Best of all, they are very affordable.

FEATURES

- Pressure ranges to 10,000 psi (700 bar)
0.25% full scale accuracy
- Fully temperature compensated accuracy
from 14°F to 122°F (-10°C to 50°C)
- Up to 13 selectable pressure units, 6 customized
definition engineering units
- Large, easy to read display with 5-digit resolution
- Backlit display
- Icon-based menu
- Display flash warning when pressure exceeds
120% of FS
- Stainless wetted surface construction
- IP67 (submersible in 1 meter of water)
- Drop-tested from 1 meter
- 2 AA alkaline batteries
- CE RTTE, FCC ID, IC ID Certificates
- NIST traceable calibration with data(included)

SPECIFICATIONS

- **Model**
ADT680: Regular version
ADT680W: Data logging and wireless version
Pressure Type: Gauge
- **Performance**
Accuracy: 0.25%FS
Update Rate: 10 times/Sec ,3 times /Sec (default),
1 time /Sec ,1 time/15 Seconds
Operating Temperate: 14°F to 122°F (-10°C to 50°C)
Compensated Temperate: 14°F to 122°F (-10°C to
50°C), accuracy Guaranteed
Storage Temperature: -4°F to 158°F (-20°C to 70°C)
Overload Pressure: 1.2X
- **Power Supply**
Battery: 2 x AA alkaline (LR6) batteries
Recommend: Duracell MX1500, EnergizerE91,
Panasonic LR6, Duracell 15AU
Usage Period:
10/Sec:1500Hours; 3/Sec: 3000Hours;
1/Sec: 6000Hours; 1/15Sec: 12000Hours
Rated Power: 3.0VDC I_{max}=30mA P_{max}=90mW
- **Material**
Wetted Surface: All wetted surfaces are 316L
Stainless Steel with welded design (no O-ring,
thread tape, epoxy, or sealant on any part of the
sensor assembly)
Case: PC+ABS
Protective Cover: Silicone Rubber (Optional)

SPECIFICATIONS

- **Display**
LCD Specification: FSTN-LCD, Visual scope
36x61mm; Full 5 digits, 15.2mm High; 7 segment
analog bar graph scaled from 0~100% of FS
Backlight: White
- **Wireless Communication (ADT680W only)**
Wireless Frequency: 2.4G ISM Bands, 20 meter
range
Number of wireless Channels : Chanel 1~15
Software: Wireless network demo software for free
- **Data Logging (ADT680W only)**
Storage Capacity: 140,000 readings(time, pressure,
and temperature)
Storage Interval: Adjustable from 1~9999 Sec
- **Compliances**
Certificates: CE RTTE, FCC ID, IC ID
Protection Level: IP67
Vibration: 5g(20~2000Hz)
Shock resistance: 100g/11ms
- **Others**
Dimensions: 100mm x 40mm, total height: 157mm
Weight: 500g
Fitting: 1/4NPT, G1/4, M20x1.5, or custom-made
- **Auto off:**
Disabled, 15, 30, 45, 60, 90, 120 Minutes optional.
- **Filtering:** Averaging (3 to 10 samples) or low-pass
first-order filter.
- **Engineering units:** Pa, kPa, MPa, bar, mba, psi, kgf/
cm², mmH₂O, mmHg, inH₂O, inHg, ozf/in, %, °C, °F.
extend units: inH₂O(20°C), inH₂O(60°F), mmH₂O(20°C),
mmH₂O(15°C), ftH₂O(60°F), ftH₂O(4°C)
- **Backlight Duration:**
Not auto off, 15, 30, 45, 60 seconds optional.
- **Max/Min data capture:** Saves Max and Min data during
pressure measurement.
- **Key Lockout:** When the gauge is in auto-storing mode,
the front panel buttons will be automatically locked.
- **Overpressure Alarm:** Display will flash over 120%FS
- **Battery voltage Indicator:** Displays the battery life
remaining. When the battery voltage is too low, the
gauge will power-off automatically.
- **Overpressure Record:**
Gauge will record max pressure data when the gauge is
over pressured by 120% of FS.
- **Leakage test:**
In leak test mode, the gauge will record beginning
pressure, ending pressure, and show the difference ΔP.
- **Factory Reset:**
Resets all settings back to factory default, except the
calibration parameters.
- **Warranty:** 1 year

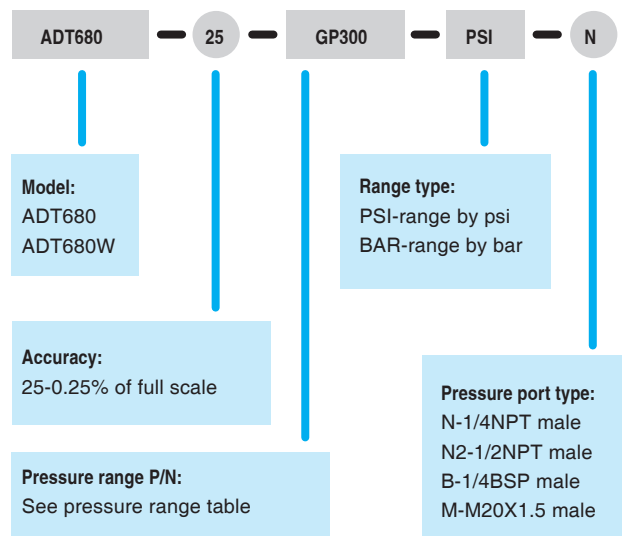
Gauge Pressure				
P/N	Pressure Range (psi) ^[1]	Pressure Range (bar)	Media ^[1]	Burst Pressure
V15	-15	-1.0	G	3X
GP15	15	1.0	G,L	3X
GP30	30	2.0	G,L	3X
GP100	100	7.0	G,L	3X
GP300	300	20	G,L	3X
GP500	500	35	G,L	3X
GP1K	1,000	70	G,L	3X
GP3K	3,000	200	G,L	3X
GP5K	5,000	350	G,L	3X
GP10K	10,000	700	G,L	3X

Note: [1]. Sealed gauge pressure for above 1000 psi

[2]. G=Gas, L=Liquid (please specify media type when place order)

ORDERING INFORMATION

Model Number



Accessories included

- AA battery (2 pcs)
- Manual
- NIST traceable calibration certificate

Optional Accessories

Model number	Description
9253	Rubber boot for Additel 680 gauge

Multifunction Process Calibrators

Selection Guide

Models	Additel 220 Multifunction Loop Calibrator	Additel 221A Multifunction Temperature Calibrator	Additel 222A Multifunction Process Calibrator	Additel 223A Documenting Process Calibrator
Measure				
Voltage(mV)	±300 mV	±75 mV	±75 mV	±75 mV
Voltage(V)	±60 V	±30 V	±30 V	±30 V
Current (mA)	±30 mA	±30 mA	±30 mA	±30 mA
Resistance(ohm)	0 to 2,000 ohm	0 to 4,000 ohm	0 to 4,000 ohm	0 to 4,000 ohm
Frequency(Hz)		1 to 50,000 Hz	1 to 50,000 Hz	1 to 50,000 Hz
Pulse		0 to 999,999	0 to 999,999	0 to 999,999
Limit Switch	3 to 24V	3 to 24V	3 to 24V	3 to 24V
Pressure			● ^[1]	● ^[1]
Source / Simulate				
Voltage(mV)	-10 to 200 mV	-10 to 75 mV	-10 to 75 mV	-10 to 75 mV
Voltage(V)	0 to 12 V	0 to 12 V	0 to 12 V	0 to 12 V
Current (mA)	0 to 22 mA	0 to 22 mA	0 to 22 mA	0 to 22 mA
Resistance(ohm)		1 to 4,000 ohm	1 to 4,000 ohm	1 to 4,000 ohm
Frequency(Hz)		0 to 50,000 Hz	0 to 50,000 Hz	0 to 50,000 Hz
Pulse		0 to 999,999	0 to 999,999	0 to 999,999
DC 24 V	●	●	●	●
Record				
Scaling	●	●	●	●
Min/Max/Avg/Tare	●			
Hold	●			
As found/ As left	●	●	●	●
Data Logging	●	●	●	●
Upload data to PC		●	●	●
Features				
24V loop supply	●	●	●	●
Ramp/ Step	●	●	●	●
Simulate Transmitter		●	●	●
RTD		11 types ^[2]	11 types ^[2]	11 types ^[2]
Thermocouple		13 types ^[3]	13 types ^[3]	13 types ^[3]
HART communication	● ^[4]			●
Documenting		●	●	●
Warranty	3 years	3 years	3 years	3 years
NIST traceable calibration	●	●	●	●
See Page	P31	P33	P36	P39

[1] Additel 160 External Pressure Module required

[2] RTD Includes Pt10(385), Pt100(385), Pt100(3916), Pt100(3926), Pt500(385), Pt1000(385), Cu10(427), Cu50(428), Cu100(428), Ni100(617), Ni120(672), Ni1000 and customized

[3] Thermocouple Includes S, R, B, K, N, E, J, T, C, D, G, L, U

[4] Built-in 250Ω resistor for HART communications.

Additel 220

Multifunction Loop Calibrator



- Measure and source loop current, mV, and V
- Measure and source simultaneously
- Loop Continuity Test capability
- 24V loop supply with simultaneous current measurement
- 3 years warranty



OVERVIEW

The 220 is a highly integrated loop calibrator featuring several patented technologies, the calibrator is an ultra-compact, rugged, and best of all, easy to use hand-held device that will source, simulate and measure loop current, mV/V, Loop Continuity Test, and also perform switch testing. Its smart phone-like menu and interface makes it simple and easy to use. The 220 is ideal for calibrating, maintaining, and troubleshooting various loop devices in the field.

FEATURES

- **Measuring and sourcing loop current, mV and V**
Measures loop current up to 30mA with 0.1µA resolution
Measures voltage signals up to 60 V, and mV signals up to 300 mV
Sources/sink loop current, mV and V
24V loop power supply with simultaneous current measurement
Simultaneous dual reading capability
Capture switch
- **Data statistics and analysis**
Display max, min, peak-to-peak, average, and percentage simultaneously
Convert data to a real physical value through re-scaling function
- **Data logging**
High-capacity storage with up to twenty thousand records
On-line view, index, analyze, auto-curve, and list the data
- **Various sources and converting mode**
Support linear, flow, valve, and 25% stepping source
Auto-source of ramping and stepping
Gauge span examination
- **"As Cal" on-site calibration tools**
Four on-site calibration tools preset: loop indicator, sensor/transmitter, signal isolator/converter, and limit alarm/switch
- **Support 2W transmitter connection**
- **Multi lingual interface**
English, Simplified Chinese
- **Convenient tools**
Calculator, thermocouple converter, HOLD screen lock
- **Easy to use**
Smartphone-like menu and interface make the operation simpler and easier
Ultra-compact, size 3.9" x 7.6" x 2.0" (100mm x 192mm x 52mm), and weight 1.6 lb (0.7 kg)
One hand operation
- **Snapshot**
Save and manage up to 100 snapshots
- **Display**
3.5 inch TFT color screen
4, 5, or 6 digits adjustable display
- **Rugged**
Rugged design for harsh environments.
Passed a 1-meter drop test
Three years warranty for the 220, and one year for the battery pack
- **Misuse protection and Electrical isolation**
Up to 30V voltage on any two sockets and up to 1A current on current sockets will not damage the calibrator. The calibrator will return to normal condition as soon as the voltage or current is removed.
Measuring, sourcing and loop power circuits are electrically isolated each other.
- **Rechargeable battery**
Rechargeable Li-ion battery for 15 hours uninterrupted use.
Battery life will be reduced when 24V is applied.
The rechargeable battery is replaceable.
- **NIST Traceable Calibration with data**
- **Firmware upgrade**
Support firmware upgrade when available
- **Warranty: 3 years**

APPLICATIONS

The 220 loop calibrator is a process tool for measuring, sourcing and simulating mA, mV and V, captures switch values and provides 24V loop power. It is a high performance solution for calibration, repair and maintenance of various loops devices, Loop Continuity Test, and switch capture.

SPECIFICATIONS

■ Electrical Specifications

Measurement Accuracy			
	Range	Resolution	Accuracy
Voltage DC	-300.000 to 300.000 mV	1μV	0.01%RD+0.005%FS
	-60.0000 to 60.0000 V	0.1mV	0.01%RD+0.005%FS
Current DC	-30.0000 to 30.0000 mA	0.1μA	0.01%RD+0.005%FS
Loop Continuity	0 to 2000.0 ohm	0.1 Ω	0.02%RD+0.2 Ω
Switch Test	For the contact with potential, the voltage within the range 3V to 24V.		

Source Accuracy			
Voltage DC	-10.00 to 200.00 mV	0.01mV	0.02%RD+0.005%FS
	0 to 12.000 V	1mV	0.02%RD+0.005%FS
Current DC	0 to 22.000 mA	1μA	0.02%RD+0.005%FS
DC24V	N/A	N/A	0.5V

■ General Specifications

Environmental Specifications	
Operating Temperature	-10°C to 50°C
Storage Temperature	-20°C to 60°C
Humidity	<90%, non-condensing

Safety Specifications	
European Compliance	CE Mark

Mechanical Specifications	
Display	3.5 inch TFT color screen
Electrical Connection	4mm sockets and flat mini-jack thermocouple socket
RS232 Interface	Standard RS232-DB9 socket
Size	3.9" x 7.6" x 2.0" (100mm x 192mm x 52mm)
Weight	1.6 lb (0.7 kg)
Power Supply	Polymer Li-ion rechargeable battery, or 10V DC adaptor
Battery	Rechargeable Li-ion battery (included)
Battery Life	15 hours uninterrupted use Battery life will be reduced when 24V is applied
Battery Charge	110V/220V external power adapter (included)

ORDERING INFORMATION

■ Model Number
ADT220

Accessories (included)	
110V/220V external power adapter	1 pc
Chargeable Li-ion battery	1 pc
Test leads	2 sets(4 pcs)
Short circuit cable	1 sets(2 pcs)
Manual	1 pc
NIST traceable calibration certificate	1 pc

* Additel/Land software could be downloaded for free at www.additel.com

Optional Accessories	
Model number	Description
9050	USB to RS232 (DB-9 Male) Adapter
9712	Spare chargeable Li-ion battery for multifunction calibrator
9816	110V/220V external power adapter for multifunction calibrator
9906	Carrying case for multifunction calibrator

Additel 221A

Multifunction Temperature Calibrator



- Sourcing, simulating and measuring temperature and electrical signals
- Smartphone-like menu and interface make the operation simple and simple
- The internal cold junction compensation sensor can be re-calibrated at ice point by users
- Ultra-compact, 3.9" x 7.6" x 2.0", and 1.6 lb (0.7kg)



OVERVIEW

A highly integrated Multifunction Temperature Calibrator featuring several patented technologies, the 221A is an ultra-compact, rugged, and easy to use hand-held device for sourcing, simulating and measuring temperature, and electrical signals. Its smartphone-like menu and interface make the operation simple. The 221A is ideal for calibrating, maintaining, and troubleshooting process instrumentation. Automation and documentation capabilities make the 221A a turnkey solution.

FEATURES

- **Sourcing, simulating and measuring temperature and electrical signals**
Sources and measures mV, mA, ohms, RTDs, thermocouples, frequency, and pulses
Simulates and measures 13 thermocouples and 11 RTDs to calibrate transmitters
24V loop power supply
Simultaneous dual reading capability
Automatic switch test
Supports square root transmitter
Pulse frequency output for the calibration of flow totalizer
- **Easy to use**
Smartphone-like menu and interface make the operation simpler and easier
Ultra-compact, size 3.9" x 7.6" x 2.0" (100mm x 192mm x 52mm), and weight 1.6 lb (0.7 kg)
One hand operation
- **Calibrated cold junction compensation (Patented)**
Cold junction equivalent block in the calibrator
A calibrated PRT element with flexible leads is installed in the equivalent block for thermocouple cold junction compensation
This PRT element can be pulled out from the calibrator and re-calibrated and corrected at ice point by users
- **Built-in temperature readout**
CVD coefficients of a calibrated PRT can be input into the calibrator for accurate temperature measurement.
- **Multi lingual interface**
English, German, French, Italian, Spanish, Portuguese, Simplified Chinese
(Traditional Chinese, Japanese and Russian are available per request)
- **Documenting and automated procedure capability**
Manage the information of the device under test. Set up automated calibration procedures, and ADT221A performs the test, calculates the errors, displays and/or stores the results in the memory, and highlights the out-of-tolerance points.
As-found and As-left functions allow recording and documenting results for quality control.
Download tasks and upload the results.
Snapshots allow you to capture and save work.
- **Build-in unit conversion tool**
Build-in converters for pressure units, temperature units, temperature vs. resistance (RTDs), and temperature vs millivolt (thermocouples)
- **Display**
3.5 inch TFT color screen
- **Rugged**
Rugged design for harsh environments.
Passed a 1-meter drop test.
Three years warranty for the ADT221A, and one year for the battery pack
- **Misuse protection**
Up to 30V voltage on any two sockets and up to 1A current on current sockets will not damage the calibrator. The calibrator will return to normal condition as soon as the voltage or current is removed.
- **NIST Traceable Calibration with data**
- **Rechargeable battery**
Rechargeable Li-ion battery for 15 hours uninterrupted use.
Battery life will be reduced when 24V is applied.
The rechargeable battery is replaceable.
- **Warranty: 3 years**

APPLICATIONS

The ADT221A multifunction temperature calibrator is a process tool for measuring, sourcing and simulating mA, mV, V, RTDs, thermocouples, ohms, frequency, and pulses, captures switch values and provides 24 V loop power.

■ Electrical

Resistance measurement / simulation
Frequency measurement / generation
Switch sensing

Voltage measurement / generation
Pulse counting/generation

Current measurement /generation
24 VDC loop supply

■ Temperature

RTD measurement /simulation

TC measurement /simulation

SPECIFICATIONS

■ Electrical Specifications

Measurement Accuracy			
	Range	Resolution	Accuracy
Voltage DC	±75.0000 mV	0.1µV	0.01%RD+0.005%FS
	±30.0000 V	0.1 mV	0.01%RD+0.005%FS
Current DC	± 30.0000 mA	0.1µA	0.01%RD+0.005%FS
Resistance	Two-wire 0 to 400.000 Ω	1mΩ	0.02%RD+0.005%FS
	Three-wire 0 to 400.000 Ω	1mΩ	0.02%RD+0.005%FS
	Four-wire 0 to 400.000 Ω	1mΩ	0.01%RD+0.005%FS
	Two-wire 0 to 4000.00 Ω	10mΩ	0.02%RD+0.005%FS
	Three-wire 0 to 4000.00 Ω	10mΩ	0.02%RD+0.005%FS
	Four-wire 0 to 4000.00 Ω	10mΩ	0.01%RD+0.005%FS
Frequency	1 to 50000.0 Hz	0.1Hz	0.005%RD+0.002%FS
Pulse	0 to 999999	1	N/A
Limit Switch	For the contact with potential, the voltage within the range 3V to 24V.		

Source Accuracy			
Voltage DC	-10.000 to 75.000mV	1µV	0.02%RD+0.005%FS
	0 to 12.0000 V	0.1mV	0.02%RD+0.005%FS
Current DC	0 to 22.000 mA	1µA	0.02%RD+0.005%FS
Resistance	1 to 400.00 Ω	10mΩ	0.02%RD+0.005%FS
	1 to 4000.0 Ω	100mΩ	0.03%RD+0.01%FS
Frequency	0 to 50000.0 Hz	0.1Hz	0.005%RD+0.002%FS
Pulse	0 to 999999	1	N/A
DC24V	N/A	N/A	0.5V

■ General Specifications

Environmental Specifications	
Operating Temperature	-10°C to 50°C
Storage Temperature	-20°C to 60°C
Humidity	<90%, non-condensing

Safety Specifications	
European Compliance	CE Mark

Mechanical Specifications	
Display	3.5 inch TFT color screen
Electrical Connection	4mm sockets and flat mini-jack thermocouple socket
RS232 Interface	Standard RS232-DB9 socket
Size	3.9" x 7.6" x 2.0" (100mm x 192mm x 52mm)
Weight	1.6 lb (0.7 kg)
Power Supply	Polymer Li-ion rechargeable battery, or 10V DC adaptor
Battery	Rechargeable Li-ion battery (included)
Battery Life	15 hours uninterrupted use Battery life will be reduced when 24V is applied
Battery Charge	110V/220V external power adapter (included)

Measurement Accuracy					
Measure and Simulate	Standard	Temperature Range(°C)		Accuracy(°C)	
				Measure	Source
S	IEC 584	-50 to 1768	-50 to 400	1.0	1.1
			400 to 1000	0.6	0.6
			1000 to 1768	0.7	0.8
R	IEC 584	-50 to 1768	-50 to 200	1.4	1.4
			200 to 500	0.6	0.6
			500 to 1768	0.6	0.7
B	IEC 584	0 to 1820	50 to 450	3.8	3.8
			450 to 800	0.9	0.9
			800 to 1820	0.6	0.7
K	IEC 584	-270 to 1372	-250 to -200	1.0	1.1
			-200 to -100	0.4	0.5
			-100 to 600	0.3	0.3
N	IEC 584	-270 to 1300	600 to 1372	0.4	0.5
			-250 to -200	1.5	1.6
			-200 to -100	0.5	0.6
E	IEC 584	-270 to 1000	-100 to 1300	0.4	0.5
			-250 to -200	0.6	0.7
			-200 to -100	0.3	0.3
J	IEC 584	-270 to 1200	-100 to 0	0.2	0.2
			0 to 700	0.2	0.3
			700 to 1000	0.2	0.4
T	IEC 584	-270 to 400	-210 to -100	0.3	0.3
			-100 to 1200	0.3	0.4
			-250 to -200	0.8	0.9
C	ASTM E988	0 to 2315	-200 to 0	0.4	0.4
			0 to 400	0.2	0.2
			0 to 1000	0.5	0.5
D	ASTM E988	0 to 2320	1000 to 1800	0.7	0.9
			1800 to 2315	1.0	1.4
			0 to 100	0.5	0.5
G	ASTM E1751	0 to 2315	100 to 1100	0.4	0.5
			1100 to 2000	0.6	0.9
			2000 to 2320	0.9	1.3
L	DIN43710	-200 to 900	0 to 200	2.4	2.4
			200 to 400	0.5	0.5
			400 to 1400	0.4	0.5
U	DIN43710	-200 to 600	1400 to 2315	0.7	1.0
			-200 to -100	0.2	0.3
			-100 to 400	0.2	0.2
			400 to 900	0.2	0.3
			-200 to 0	0.4	0.4
			0 to 600	0.2	0.3

SPECIFICATIONS

Measurement Accuracy						
Measure and Simulate	Standard	Temperature Range (°C)		Accuracy (°C)		
				Measure (2W/3W)	Measure (4W)	Source
Pt10(385)	IEC 751	-200 to 850	-100 to 200	0.65	0.60	0.65
			200 to 600	0.82	0.72	0.82
			600 to 850	0.96	0.82	0.96
PT100(385)	IEC 751	-200 to 850	-100 to 200	0.15	0.1	0.15
			200 to 600	0.26	0.16	0.26
			600 to 850	0.34	0.20	0.34
Pt100(3916)	JIS 1604	-200 to 850	-100 to 200	0.15	0.1	0.15
			200 to 600	0.26	0.16	0.26
			600 to 850	0.33	0.20	0.33
Pt200(385)	IEC 751	-200 to 850	-100 to 200	0.37	0.32	0.69
			200 to 600	0.51	0.41	0.92
			600 to 850	0.61	0.48	1.08
Pt500(385)	IEC 751	-200 to 850	-100 to 200	0.20	0.16	0.36
			200 to 600	0.32	0.22	0.54
			600 to 850	0.40	0.27	0.67
Pt1000(385)	IEC 751	-200 to 850	-100 to 200	0.1	0.05	0.25
			200 to 600	0.2	0.10	0.42
			600 to 850	0.27	0.14	0.54
Cu10(427)	Minco Application Aid #18	-100 to 260	-100 to 260	0.61	0.56	0.61
Cu50(428)	GOST 6651-94	-50 to 150	-50 to 150	0.17	0.13	0.17
Cu100(428)	GOST6651-94	-50 to 150	-50 to 150	0.12	0.09	0.12
Ni120(672)	Edison curve #7	-100 to 260	-100 to 260	0.07	0.05	0.07
Ni100(618)	DIN 43760	-100 to 260	-100 to 260	0.08	0.06	0.08

ORDERING INFORMATION

■ Model Number ADT221A

Accessories (included)	
110V/220V external power adapter	1 pc
Chargeable Li-ion battery	1 pc
Test leads	2 sets(4 pcs)
Short circuit cable	1 sets(2 pcs)
Manual	1 pc
NIST traceable calibration certificate	1 pc

* Additel/Land software could be downloaded for free at www.additel.com

Optional Accessories	
Model number	Description
9050	USB to RS232 (DB-9 Male) Adapter
9080	Cold Junction compensation kits (including TC plug, compensation cable, S,R,B,K,J,T,E,N)
9712	Spare chargeable Li-ion battery for multifunction calibrator
9816	110V/220V external power adapter for multifunction calibrator
9906	Carrying case for multifunction calibrator
9510	Additel/Cal Task management software for multifunction calibrator

Additel 222A

Multifunction Process Calibrator



- Sourcing, simulating and measuring pressure, temperature and electrical signals
- Smartphone-like menu and interface make the operation simple
- The internal cold junction compensation sensor can be re-calibrated at ice point by users
- Ultra-compact, 3.9" x 7.6" x 2.0", and 1.6 lb (0.7 kg)



OVERVIEW

A highly integrated multifunction calibrator featuring several patented technologies, the 222A is an ultra-compact, rugged, and easy to use hand-held device for sourcing, simulating and measuring pressure, temperature, and electrical signals. Its smartphone-like menu and interface make the operation simple. The 222A is ideal for calibrating, maintaining, and troubleshooting process instrumentation. Automation and documentation capabilities make the 222A a turnkey solution.

FEATURES

- **Sourcing, simulating and measuring pressure, temperature and electrical signals**
Sources and measures mV, mA, ohms, RTDs, thermocouples, frequency, and pulses
Simulates and measures 13 thermocouples, 11 RTDs, and pressure to calibrate transmitters
Measures and sources pressure using Additel 160 series Intelligent Digital Pressure Modules from -15 psi to 10,000 psi (-1 bar to 700 bar)
24V loop power supply
Simultaneous dual reading capability
Automatic switch test
Supports square root transmitter
Pulse frequency output for the calibration of flow totalizer
- **Easy to use**
Smartphone-like menu and interface make the operation simpler and easier
Ultra-compact, size 3.9" x 7.6" x 2.0" (100mm x 192mm x 52mm), and weight 1.6 lb (0.7 kg)
One hand operation
- **Calibrated cold junction compensation (Patented)**
Cold junction equivalent block in the calibrator
A calibrated PRT element with flexible leads is installed in the equivalent block for thermocouple cold junction compensation
This PRT element can be pulled out from the calibrator and re-calibrated and corrected at ice point by users
- **Built-in temperature readout**
CVD coefficients of a calibrated PRT can be input into the calibrator for accurate temperature measurement.
- **Multi lingual interface**
English, German, French, Italian, Spanish, Portuguese, Simplified Chinese (Traditional Chinese, Japanese and Russian are available per request)
- **Documenting and automated procedure capability**
Manage the information of the device under test
Set up automated calibration procedures, and the Additel 222A performs the test, calculates the errors, displays and/or stores the results in the memory, and highlights the out-of-tolerance points.
As-found and As-left functions allow recording and documenting results for quality control.
Download tasks and upload the results
Snapshots allow you to capture and save work.
- **Build-in unit conversion tool**
Build-in converters for pressure units, temperature units, temperature vs. resistance (RTDs), and temperature vs. millivolt (thermocouples)
- **Display**
3.5 inch TFT color screen
- **Rugged**
Rugged design for harsh environments.
Passed a 1-meter drop test
Three year warranty for the ADT222A, and one year for the battery pack
- **Misuse protection**
Up to 30V voltage on any two sockets and up to 1A current on current sockets will not damage the calibrator. The calibrator will return to normal condition as soon as the voltage or current is removed.
- **Rechargeable battery**
Rechargeable Li-ion battery for 15 hours uninterrupted use.
Battery life will be reduced when 24V is applied
The rechargeable battery is replaceable.
- **NIST Traceable Calibration with data**
- **Warranty: 3 years**

APPLICATIONS

The 222A multifunction calibrator is a process tool for measuring, sourcing and simulating mA, mV, V, RTDs, thermocouples, ohms, frequency, pulses and pressure, captures switch values and provides 24 V loop power.

Electrical

Resistance measurement / simulation
Voltage measurement / generation
Current measurement / generation
Frequency measurement / generation
Pulse counting/generation
24 VDC loop supply
Switch sensing

Temperature

RTD measurement /simulation
TC measurement /simulation

Pressure

Gauge pressure measurement
Absolute pressure measurement

SPECIFICATIONS

Electrical Specifications

Measurement Accuracy			
	Range	Resolution	Accuracy
Voltage DC	±75.0000 mV	0.1μV	0.01%RD+0.005%FS
	±30.0000 V	0.1 mV	0.01%RD+0.005%FS
Current DC	± 30.0000 mA	0.1μA	0.01%RD+0.005%FS
Resistance	Two-wire 0 to 400.000 Ω	1mΩ	0.02%RD+0.005%FS
	Three-wire 0 to 400.000 Ω	1mΩ	0.02%RD+0.005%FS
	Four-wire 0 to 400.000 Ω	1mΩ	0.01%RD+0.005%FS
	Two-wire 0 to 4000.00 Ω	10mΩ	0.02%RD+0.005%FS
	Three-wire 0 to 4000.00 Ω	10mΩ	0.02%RD+0.005%FS
	Four-wire 0 to 4000.00 Ω	10mΩ	0.01%RD+0.005%FS
Frequency	1 to 50000.0 Hz	0.1Hz	0.005%RD+0.002%FS
Pulse	0 to 999999	1	N/A
Limit Switch	For the contact with potential, the voltage within the range 3V to 24V.		

Source Accuracy			
Voltage DC	-10.000 to 75.000mV	1μV	0.02%RD+0.005%FS
	0 to 12.0000 V	0.1mV	0.02%RD+0.005%FS
Current DC	0 to 22.000 mA	1μA	0.02%RD+0.005%FS
Resistance	1 to 400.00 Ω	10mΩ	0.02%RD+0.005%FS
	1 to 4000.0 Ω	100mΩ	0.03%RD+0.01%FS
Frequency	0 to 50000.0 Hz	0.1Hz	0.005%RD+0.002%FS
Pulse	0 to 999999	1	N/A
DC24V	N/A	N/A	0.5V

General Specifications

Environmental Specifications	
Operating Temperature	-10°C to 50°C
Storage Temperature	-20°C to 60°C
Humidity	<90%, non-condensing
Safety Specifications	
European Compliance	CE Mark
Mechanical Specifications	
Display	3.5 inch TFT color screen
Electrical Connection	Ø4mm sockets and flat mini-jack thermocouple socket
RS232 Interface	Standard RS232-DB9 socket
Size	3.9" x 7.6" x 2.0" (100mm x 192mm x 52mm)
Weight	1.6 lb (0.7 kg)
Power Supply	Polymer Li-ion rechargeable battery, or 10V DC adaptor
Battery	Rechargeable Li-ion battery (included)
Battery Life	15 hours uninterrupted use Battery life will be reduced when 24V is applied
Battery Charge	110V/220V external power adapter (included)

Safety Specifications

The 160 series Intelligent Digital Pressure Modules are available for gauge, vacuum and absolute pressure from -15 psi to 10,000 psi (-1 bar to 700 bar). Accuracy from 0.025% FS includes operation over 14°F to 122°F (-10°C to 50°C), one year stability and calibration uncertainty. For detail specification refer to pressure modules datasheet.

Temperature Specification

Thermocouple Measurement and Source Accuracy					
Measure and Simulate	Standard	Temperature Range(°C)		Accuracy(°C)	
				Measure	Source
S	IEC 584	-50 to 1768	-50 to 400	1.0	1.1
			400 to 1000	0.6	0.6
			1000 to 1768	0.7	0.8
R	IEC 584	-50 to 1768	-50 to 200	1.4	1.4
			200 to 500	0.6	0.6
			500 to 1768	0.6	0.7
B	IEC 584	0 to 1820	50 to 450	3.8	3.8
			450 to 800	0.9	0.9
			800 to 1820	0.7	0.7
K	IEC 584	-270 to 1372	-250 to -200	1.0	1.1
			-200 to -100	0.4	0.5
			-100 to 600	0.3	0.3
N	IEC 584	-270 to 1300	600 to 1372	0.4	0.5
			-250 to -200	1.5	1.6
			-200 to -100	0.5	0.6
E	IEC 584	-270 to 1000	-100 to 1300	0.4	0.5
			-250 to -200	0.6	0.7
			-200 to -100	0.3	0.3
J	IEC 584	-270 to 1200	-100 to 0	0.2	0.2
			0 to 700	0.2	0.3
			700 to 1000	0.2	0.4
T	IEC 584	-270 to 400	-210 to -100	0.3	0.3
			-100 to 1200	0.3	0.4
			-250 to -200	0.8	0.9
C	ASTM E988	0 to 2315	-200 to 0	0.4	0.4
			0 to 400	0.2	0.2
			0 to 1000	0.5	0.5
D	ASTM E988	0 to 2320	1000 to 1800	0.7	0.9
			1800 to 2315	1.0	1.4
			0 to 100	0.5	0.5
G	ASTM E1751	0 to 2315	100 to 1100	0.4	0.5
			1100 to 2000	0.6	0.9
			2000 to 2320	0.9	1.3
L	DIN43710	-200 to 900	0 to 200	2.4	2.4
			200 to 400	0.5	0.5
			400 to 1400	0.4	0.5
U	DIN43710	-200 to 600	1400 to 2315	0.7	1.0
			-200 to -100	0.2	0.3
			-100 to 400	0.2	0.2
			400 to 900	0.2	0.3
			-200 to 0	0.4	0.4
			0 to 600	0.2	0.3

Additel 222A

Multifunction Process Calibrator



SPECIFICATIONS

Measurement Accuracy						
Measure and Simulate	Standard	Temperature Range (°C)		Accuracy (°C)		
				Measure (2W/3W)	Measure (4W)	Source
Pt10(385)	IEC 751	-200 to 850	-100 to 200	0.65	0.60	0.65
			200 to 600	0.82	0.72	0.82
			600 to 850	0.96	0.82	0.96
PT100(385)	IEC 751	-200 to 850	-100 to 200	0.15	0.1	0.15
			200 to 600	0.26	0.16	0.26
			600 to 850	0.34	0.20	0.34
Pt100(3916)	JIS 1604	-200 to 850	-100 to 200	0.15	0.1	0.15
			200 to 600	0.26	0.16	0.26
			600 to 850	0.33	0.20	0.33
Pt200(385)	IEC 751	-200 to 850	-100 to 200	0.37	0.32	0.69
			200 to 600	0.51	0.41	0.92
			600 to 850	0.61	0.48	1.08
Pt500(385)	IEC 751	-200 to 850	-100 to 200	0.20	0.16	0.36
			200 to 600	0.32	0.22	0.54
			600 to 850	0.40	0.27	0.67
Pt1000(385)	IEC 751	-200 to 850	-100 to 200	0.1	0.05	0.25
			200 to 600	0.2	0.10	0.42
			600 to 850	0.27	0.14	0.54
Cu10(427)	Minco Application Aid #18	-100 to 260	-100 to 260	0.61	0.56	0.61
Cu50(428)	GOST 6651-94	-50 to 150	-50 to 150	0.17	0.13	0.17
Cu100(428)	GOST6651-94	-50 to 150	-50 to 150	0.12	0.09	0.12
Ni120(672)	Edison curve #7	-100 to 260	-100 to 260	0.07	0.05	0.07
Ni100(618)	DIN 43760	-100 to 260	-100 to 260	0.08	0.06	0.08

ORDERING INFORMATION

Model Number

Additel 222A

Accessories (included)	
110V/220V external power adapter	1 pc
Chargeable Li-ion battery	1 pc
Test leads	3 sets(6 pcs)
Short circuit cable	1 sets(2 pcs)
9060 Pressure module connection cable	1 pc
Manual	1 pc
NIST traceable calibration certificate	1 pc

* Additel/Land software could be downloaded for free at www.additel.com

Optional Accessories	
Model number	Description
ADT160	Intelligent Digital Pressure Modules
9060	Pressure module connection cable
9050	USB to RS232 (DB-9 Male) Adapter
9080	Cold Junction compensation kits (including TC plug, compensation cable, S,R,B,K,J,T,E,N)
9712	Spare chargeable Li-ion battery for multifunction calibrator
9816	110V/220V external power adapter for multifunction calibrator
9906	Carrying case for multifunction calibrator
9510	Additel/Cal Task management software for multifunction calibrator

Additel 223A

Documenting Process Calibrator



- Sourcing, simulating and measuring pressure, temperature and electrical signals
- Smartphone-like menu and interface make the operation simple
- HART Communication capability
- The internal cold junction compensation sensor can be re-calibrated at ice point by user
- Ultra-compact, 3.9" x 7.6" x 2.0", and 1.6 lb (0.7 kg)



OVERVIEW

A highly integrated multifunction calibrator featuring several patented technologies, the 223A is an ultra-compact, rugged, and easy to use hand-held device for sourcing, simulating and measuring pressure, temperature, and electrical signals. Its smartphone-like menu and interface make the operation simple. With HART communication capability, the 223A is ideal for calibrating, maintaining, and troubleshooting HART instrumentation. Automation and documentation capabilities make the 223A a turnkey solution.

FEATURES

- **Sourcing, simulating and measuring temperature and electrical signals**
Sources and measures mV, mA, ohms, RTDs, thermocouples, frequency, and pulses
Simulates and measures 13 thermocouples and 11 RTDs to calibrate transmitters
Measures and sources pressure using Additel 160 series Intelligent Digital Pressure Modules from -15 psi to 1,000 psi (-1 bar to 700 bar)
24V loop power supply
Simultaneous dual reading capability
Automatic switch test
Supports square root transmitter
Pulse frequency output for the calibration of flow totalizer
- **Easy to use**
Smartphone-like menu and interface make the operation simpler and easier
Ultra-compact, size 3.9" x 7.6" x 2.0" (100mm x 192mm x 52mm), and weight 1.6 lb (0.7 kg)
One hand operation
- **Calibrated cold junction compensation (Patented)**
Cold junction equivalent block in the calibrator
A calibrated PRT element with flexible leads is installed in the equivalent block for thermocouple cold junction compensation
This PRT element can be pulled out from the calibrator and re-calibrated and corrected at ice point by users
- **Built-in temperature readout**
CVD coefficients of a calibrated PRT can be input into the calibrator for accurate temperature measurement.
- **Multi lingual interface**
English, German, French, Italian, Spanish, Portuguese, Simplified Chinese
(Traditional Chinese, Japanese and Russian are available per request)
- **Documenting and automated procedure capability**
Manage the information of the device under test.
Set up automated calibration procedures, and 223A performs the test, calculates the errors, displays and/or stores the results in the memory, and highlights the out-of-tolerance points.
As-found and As-left functions allow recording and documenting results for quality control.
Download tasks and upload the results.
Snapshots allow you to capture and save work.
- **HART Communication capability**
Support HART® instrumentation
- **Build-in unit conversion tool**
Build-in converters for pressure units, temperature units, temperature vs. resistance (RTDs), and temperature vs. millivolt (thermocouples)
- **Display**
3.5 inch TFT color screen
- **Rugged**
Rugged design for harsh environments.
Passed a 1-meter drop test.
Three years warranty for the 223A, and one year for the battery pack
- **Misuse protection**
Up to 30V voltage on any two sockets and up to 1A current on current sockets will not damage the calibrator. The calibrator will return to normal condition as soon as the voltage or current is removed.
- **Rechargeable battery**
Rechargeable Li-ion battery for 15 hours uninterrupted use.
Battery life will be reduced when 24V is applied.
The rechargeable battery is replaceable.

APPLICATIONS

The 223A multifunction calibrator is a process tool for measuring, sourcing and simulating mA, mV, V, RTDs, thermocouples, ohms, frequency, pulses and pressure, captures switch values and provides 24 V loop power.

- **Electrical**
 - Resistance measurement / simulation
 - Frequency measurement / generation
 - Switch sensing
- **Temperature**
 - RTD measurement /simulation
 - TC measurement /simulation
- **NIST Traceable Calibration with data**
- **Warranty: 3 years**

SPECIFICATIONS

Electrical Specifications

Measurement Accuracy				
		Range	Resolution	Accuracy
Voltage DC		±75.0000 mV	0.1μV	0.01%RD+0.005%FS
		±30.0000 V	0.1 mV	0.01%RD+0.005%FS
Current DC		± 30.0000 mA	0.1μA	0.01%RD+0.005%FS
Resistance	Two-wire	0 to 400.000 Ω	1mΩ	0.02%RD+0.005%FS
	Three-wire	0 to 400.000 Ω	1mΩ	0.02%RD+0.005%FS
	Four-wire	0 to 400.000 Ω	1mΩ	0.01%RD+0.005%FS
	Two-wire	0 to 4000.00 Ω	10mΩ	0.02%RD+0.005%FS
	Three-wire	0 to 4000.00 Ω	10mΩ	0.02%RD+0.005%FS
	Four-wire	0 to 4000.00 Ω	10mΩ	0.01%RD+0.005%FS
Frequency		1 to 50000.0 Hz	0.1Hz	0.005%RD+0.002%FS
Pulse		0 to 999999	1	N/A
Limit Switch		For the contact with potential, the voltage within the range 3V to 24V.		
Source Accuracy				
Voltage DC	-10.000 to 75.000mV	1μV	0.02%RD+0.005%FS	
	0 to 12.0000 V	0.1mV	0.02%RD+0.005%FS	
Current DC	0 to 22.000 mA	1μA	0.02%RD+0.005%FS	
Resistance	1 to 400.00 Ω	10mΩ	0.02%RD+0.005%FS	
	1 to 4000.0 Ω	100mΩ	0.03%RD+0.01%FS	
Frequency	0 to 50000.0 Hz	0.1Hz	0.005%RD+0.002%FS	
Pulse	0 to 999999	1	N/A	
DC24V	N/A	N/A	0.5V	

General Specifications

Environmental Specifications	
Operating Temperature	-10°C to 50°C
Storage Temperature	-20°C to 60°C
Humidity	<90%, non-condensing
Safety Specifications	
European Compliance	CE Mark
Mechanical Specifications	
Display	3.5 inch TFT color screen
Electrical Connection	4mm sockets and flat mini-jack thermocouple socket
RS232 Interface	Standard RS232-DB9 socket
Size	3.9" x 7.6" x 2.0" (100mm x 192mm x 52mm)
Weight	1.6 lb (0.7 kg)
Power Supply	Polymer Li-ion rechargeable battery, or 10V DC adaptor
Battery	Rechargeable Li-ion battery (included)
Battery Life	15 hours uninterrupted use Battery life will be reduced when 24V is applied
Battery Charge	110V/220V external power adapter (included)

Pressure Specification

The 160 series Intelligent Digital Pressure Modules are available for gauge, vacuum and absolute pressure from -15 psi to 10,000 psi (-1 bar to 700 bar). Accuracy from 0.025% FS includes operation over 14°F to 122°F (-10°C to 50°C), one year stability and calibration uncertainty. For detail specification refer to pressure modules datasheet.

Temperature Specification

Thermocouple Measurement and Source Accuracy					
Measure and Simulate	Standard	Temperature Range (°C)	Accuracy (°C)		
			Measure	Source	
S	IEC 584	-50 to 1768	-50 to 400	1.0	1.1
			400 to 1000	0.6	0.6
			1000 to 1768	0.7	0.8
R	IEC 584	-50 to 1768	-50 to 200	1.4	1.4
			200 to 500	0.6	0.6
			500 to 1768	0.6	0.7
B	IEC 584	0 to 1820	50 to 450	3.8	3.8
			450 to 800	0.9	0.9
			800 to 1820	0.6	0.7
K	IEC 584	-270 to 1372	-250 to -200	1.0	1.1
			-200 to -100	0.4	0.5
			-100 to 600	0.3	0.3
			600 to 1372	0.4	0.5
N	IEC 584	-270 to 1300	-250 to -200	1.5	1.6
			-200 to -100	0.5	0.6
			-100 to 1300	0.4	0.5
E	IEC 584	-270 to 1000	-250 to -200	0.6	0.7
			-200 to -100	0.3	0.3
			-100 to 0	0.2	0.2
			0 to 700	0.2	0.3
			700 to 1000	0.2	0.4
J	IEC 584	-270 to 1200	-210 to -100	0.3	0.3
			-100 to 1200	0.3	0.4
T	IEC 584	-270 to 400	-250 to -200	0.8	0.9
			-200 to 0	0.4	0.4
			0 to 400	0.2	0.2
C	ASTM E988	0 to 2315	0 to 1000	0.5	0.5
			1000 to 1800	0.7	0.9
			1800 to 2315	1.0	1.4
D	ASTM E988	0 to 2320	0 to 100	0.5	0.5
			100 to 1100	0.4	0.5
			1100 to 2000	0.6	0.9
			2000 to 2320	0.9	1.3
G	ASTM E1751	0 to 2315	0 to 200	2.4	2.4
			200 to 400	0.5	0.5
			400 to 1400	0.4	0.5
			1400 to 2315	0.7	1.0
L	DIN43710	-200 to 900	-200 to -100	0.2	0.3
			-100 to 400	0.2	0.2
			400 to 900	0.2	0.3
U	DIN43710	-200 to 600	-200 to 0	0.4	0.4
			0 to 600	0.2	0.3

SPECIFICATIONS

Measurement Accuracy						
Measure and Simulate	Standard	Temperature Range (°C)		Accuracy (°C)		
				Measure (2W/3W)	Measure (4W)	Source
Pt10(385)	IEC 751	-200 to 850	-100 to 200	0.65	0.60	0.65
			200 to 600	0.82	0.72	0.82
			600 to 850	0.96	0.82	0.96
PT100(385)	IEC 751	-200 to 850	-100 to 200	0.15	0.1	0.15
			200 to 600	0.26	0.16	0.26
			600 to 850	0.34	0.20	0.34
Pt100(3916)	JIS 1604	-200 to 850	-100 to 200	0.15	0.1	0.15
			200 to 600	0.26	0.16	0.26
			600 to 850	0.33	0.20	0.33
Pt200(385)	IEC 751	-200 to 850	-100 to 200	0.37	0.32	0.69
			200 to 600	0.51	0.41	0.92
			600 to 850	0.61	0.48	1.08
Pt500(385)	IEC 751	-200 to 850	-100 to 200	0.20	0.16	0.36
			200 to 600	0.32	0.22	0.54
			600 to 850	0.40	0.27	0.67
Pt1000(385)	IEC 751	-200 to 850	-100 to 200	0.1	0.05	0.25
			200 to 600	0.2	0.10	0.42
			600 to 850	0.27	0.14	0.54
Cu10(427)	Minco Application Aid #18	-100 to 260	-100 to 260	0.61	0.56	0.61
Cu50(428)	GOST 6651-94	-50 to 150	-50 to 150	0.17	0.13	0.17
Cu100(428)	GOST6651-94	-50 to 150	-50 to 150	0.12	0.09	0.12
Ni120(672)	Edison curve #7	-100 to 260	-100 to 260	0.07	0.05	0.07
Ni100(618)	DIN 43760	-100 to 260	-100 to 260	0.08	0.06	0.08

ORDERING INFORMATION

Model Number ADT223A

Accessories (included)	
110V/220V external power adapter	1 pc
Chargeable Li-ion battery	1 pc
Test leads	3 sets(6 pcs)
Short circuit cable	1 sets(2 pcs)
9060 Pressure module connection cable	1 pc
Manual	1 pc
NIST traceable calibration certificate	1 pc

* Additel/Land software could be downloaded for free at www.additel.com

Optional Accessories	
Model number	Description
ADT160	Intelligent Digital Pressure Modules
9060	Pressure module connection cable
9050	USB to RS232 (DB-9 Male) Adapter
9080	Cold Junction compensation kits (including TC plug, compensation cable, S,R,B,K,J,T,E,N)
9712	Spare chargeable Li-ion battery for multifunction calibrator
9816	110V/220V external power adapter for multifunction calibrator
9906	Carrying case for multifunction calibrator
9510	Additel/Cal Task management software for multifunction calibrator



Additel 160

Intelligent Digital Pressure Modules

- Pressure measurement accuracy of 0.025% FS
- Pressure ranges to 10,000 psi (700 bar)
- Fully temperature compensated accuracy



Gauge pressure Differential pressure

OVERVIEW

With advanced microprocessor technology and state-of-the-art silicon pressure sensors, the Additel 160 series Intelligent Digital Pressure Module (IDPM) provides an accurate, reliable, and economic solution for wide range of pressure applications. It is loaded with functionality and remarkably easy to use. In order to reach the best performance, every silicon pressure sensor in the module has been specially aged, tested and screened before assembly. Designed as external pressure module for Additel 761 automated pressure calibrator and Additel 222A, Additel 223A and Additel 761 calibrators, the Additel 160 IDPM is unmatched in performance and reliability.

FEATURES

- Gauge pressure measurement accuracy of 0.025% FS
- Absolute Pressure measurement accuracy of 0.1% FS
- Pressure ranges to 10,000 psi (700 bar)
- Advanced temperature compensation
- NIST traceable calibration and data included

SPECIFICATIONS

- **Gauge types**
Gauge pressure
Compound pressure
Absolute pressure
- **Pressure Ranges and Accuracy**

Compound Pressure					
P/N	Pressure Range (psi)	Pressure Range (bar)	Media	Accuracy(%FS)	Burst Pressure
CP2	±2	±0.16	G	0.05	3X
CP5	±5	±0.35	G	0.025	3X
CP10	±10	±0.7	G	0.025	3X
CP15	±15	±1	G	0.025	3X
CP30	-15 to 30	-1 to 2	G	0.025	3X
CP100	-15 to 100	-1 to 7	G, L	0.025	3X
CP300	-15 to 300	-1 to 20	G, L	0.025	3X

Gauge Pressure ^[1]					
P/N	Pressure Range (psi)	Pressure Range (bar)	Media ^[2]	Accuracy(%FS)	Burst Pressure
V15	-15	-1.0	G	0.025	3X
GP2	2	0.16	G	0.05	3X
GP5	5	0.35	G	0.025	3X
GP10	10	0.7	G	0.025	3X
GP15	15	1.0	G	0.025	3X
GP30	30	2.0	G	0.025	3X
GP50	50	3.5	G, L	0.025	3X
GP100	100	7.0	G, L	0.025	3X
GP300	300	20	G, L	0.025	3X
GP500	500	35	G, L	0.025	3X
GP600	600	40	G, L	0.025	3X
GP1K	1,000	70	G, L	0.025	3X
GP2K	2,000	140	G, L	0.025	3X
GP3K	3,000	200	G, L	0.025	3X
GP5K	5,000	350	G, L	0.025	3X
GP10K	10,000	700	G, L	0.025	2X

Note:

[1]. Sealed gauge pressure for above 1000 psi

[2]. G=Gas, L=Liquid

SPECIFICATIONS

Absolute Pressure					
P/N	Pressure Range (psi)	Pressure Range (bar)	Media	Accuracy (%FS)	Burst Pressure
AP5	5	0.35	G	0.1	3X
AP10	10	0.7	G	0.1	3X
AP15	15	1.0	G	0.1	3X
AP30	30	2.0	G	0.1	3X
AP50	50	3.5	G	0.1	3X
AP100	100	7.0	G , L	0.1	3X
AP300	300	20	G , L	0.1	3X
AP500	500	35	G , L	0.1	3X
AP1K	1,000	70	G , L	0.1	3X
AP3K	3,000	200	G , L	0.1	3X
AP5K	5,000	350	G , L	0.1	3X

Differential Pressure					
P/N	Pressure Range (psi)	Pressure Range (bar)	Media	Accuracy(%FS)	Burst Pressure
DP1	±1	±2.5	G	0.05	100X
DP2	±2	±5.0	G	0.05	100X
DP5	±5	±10	G	0.05	50X
DP10	±10	±25	G	0.05	20X
DP20	±20	±50	G	0.05	20X
DP30	±30	±75	G	0.05	20X
DP50	±50	±160	G	0.05	3X
DP150	±150	±350	G	0.025	3X
DP300	±300	±700	G	0.025	3X

- Environmental**
Compensated Temperature: 14°F to 122°F (-10°C to 50°C)
Operating Temperature*: 14°F to 122°F (-10°C to 50°C)
*0.025%FS accuracy guaranteed only over the ambient temperature range of 68°F to 79°F (20°C to 26°C)
Storage Temperature: -4°F to 158°F (-20°C to 70°C)
Humidity: <95%

- Pressure Connections**
1/4NPT male, 1/4BSP male, M20X1.5 male
Other Connections available per request

- Enclosure**
Case material: SST
Wetted parts: 316L SS
Dimension: Ø1.3" x 4.84" (Ø33mm x 123mm)
Weight: 0.99 lb (0.4kg)

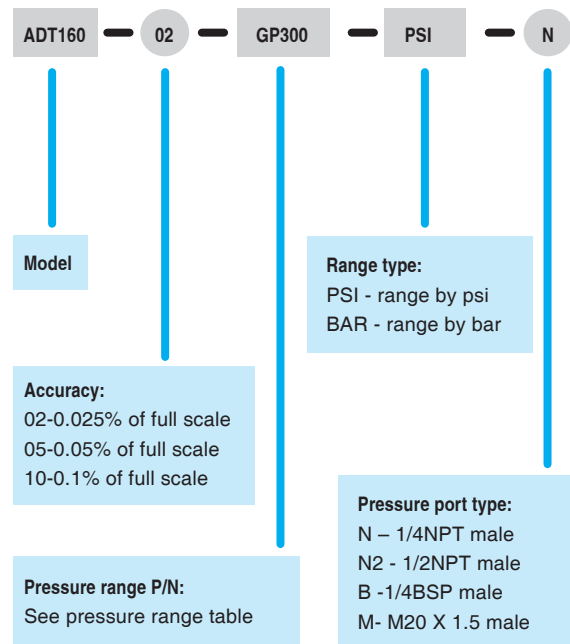
- Warranty: 1 Year**



Additel 160 Application

ORDERING INFORMATION

Model Number



- Accessories included**
NIST Traceable Calibration Certificate

Optional Accessories

Model number	Description	Picture
9060	Pressure module connection cable	

Pressure Test/Calibration Pumps

Selection Guide

Model	Type	Range in psi	Range in bar	Media	Adjustment Resolution	Weight	See Page
Additel 901	Pneumatic	-6 to 6 psi	-0.4 to 0.4 bar	Air	0.001 mbar	3.5 lb	P16
Additel 912	Pneumatic	-95% to 60 psi	-95% to 4 bar	Air	0.001 mbar	6.2 lb	P17
Additel 914	Pneumatic	-95% to 375 psi	-95% to 25 bar	Air	0.1 mbar	3.3 lb	P18
Additel 916	Pneumatic	-95% to 600 psi	-95% to 40 bar	Air	0.1 mbar	5.9 lb	P19
NEW Additel 917	Pneumatic	-95% to 1,000 psi	-95% to 70 bar	Air	0.1 mbar	5.7 lb	P20
NEW Additel 918	Pneumatic	-95% to 1,500 psi	-95% to 100 bar	Air	0.1 mbar	5.7 lb	P21
Additel 919A	Pneumatic	-95% to 2,000 psi	-95% to 140 bar	Air	0.1 mbar	14.3 lb	P22
NEW Additel 920	Pneumatic	-95% to 3,000 psi	-95% to 200 bar	Air	0.1 mbar	14.3 lb	P23
Additel 925	Hydraulic	-85% to 6,000 psi	-85% to 400 bar	Oil/Water ^[1]	1 mbar	3.7 lb	P24
Additel 927	Hydraulic	-85% to 10,000 psi	-85% to 700 bar	Oil/Water ^[1]	1 mbar	7 lb	P25
Additel 936	Hydraulic	-85% to 15,000 psi	-85% to 1,000 bar	Oil	1 mbar	35.2 lb	P26
Additel 937	Hydraulic	-85% to 15,000 psi	-85% to 1,000 bar	Oil ^[2]	1 mbar	35.2 lb	P27
Additel 938	Hydraulic	-85% to 15,000 psi	-85% to 1,000 bar	Water	1 mbar	35.2 lb	P28
Additel 949	Hydraulic	-85% to 37,500 psi	-85% to 2,500 bar	Oil	1 mbar	35.2 lb	P29

[1] Oil is default media liquid. Pump with water as media to be ordered specially.

[2] Oil, Compatible to phosphoric acid fluid or skydrol oil.

Low Pressure Test Pump

- Generate 6 psi (0.4 bar) vacuum to 6 psi (0.4 bar) pressure
- Portable, only 3.5 lb
- Great stability and high resolution
- Minimal maintenance
- Hand-tight quick connectors



OVERVIEW

The 901 Low Pressure Test Pump is a hand operated pressure pump designed to generate pressures from -6 psi (-0.4 bar) to 6 psi (0.4 bar). A high-quality screw press is designed for fine pressure adjustment, with an adjustment resolution up to 0.1 Pa (0.001 mbar). The 901 is a very stable low pressure calibrator. It makes use of an isothermal bellows chamber which is designed for reducing the possible effects of environmental temperature change. Most pumps make use of a check valve (non-returning valve) and are not well insulated which will cause large fluctuations in pressure with a change in ambient temperature or when the unit is touched. The 901 does not use a check valve and is remarkably stable. Two hand-tight connectors installed on the pump allow easy connecting and disconnecting to the test pump without the need for PTFE tape or wrenches. The 901 is an ideal comparison test pump for low pressure applications.

FEATURES

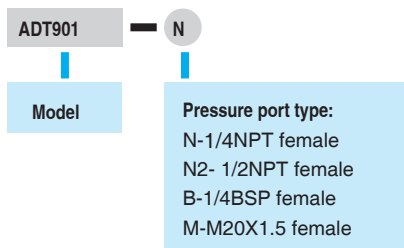
- **Portable:** Only 3.5 lb
- **Adjustment Resolution**
0.1Pa (0.001 mbar); Specially designed screw press for fine pressure adjustment.
- **Great Stability**
Isothermal chamber: the pressure chamber is insulated to reduce the influence from environmental temperature changes.
Specially designed bellows minimize leakage to guarantee excellent stability.
- **Durable and Minimal Maintenance**
Without non-returning valve that is usually used on troublesome hand pump.
- **Easy-to-use**
Pressure could be set and adjusted precisely and quickly through a simple turn of the handle.
- **Hand-tight Quick Connectors**
Allows easy connecting and disconnecting to the test pump without the need for PTFE tape or wrenches.

SPECIFICATIONS

- **Media:** Air.
- **Generated Pressure Range**
6 psi (0.4 bar) vacuum to 6 psi (0.4 bar) positive pressure.
- **Adjustment Resolution:** 0.1 Pa (0.001 mbar).
- **Material:**
Ram/adapters: SST
Body: SST/aluminum
Seals: Buna-N
- **Connection**
Hand-tight connectors for both test gauge and reference gauge. Test Gauge Connection: 1/4NPT female, 1/4BSP female, or M20X1.5 female
Reference Gauge Connection: 1/4NPT female, 1/4BSP female, or M20X1.5 female
- **Dimensions:** Height: 5.7" (145mm)
Base: 9.65" (245 mm) x 6.50" (165mm)
- **Weight:** 3.5 lb (1.6 kg).
- **Warranty:** 1 year.

ORDERING INFORMATION

■ Model Number



■ Accessories included

O-ring: 20 pcs
Manual: 1 pc

■ Optional Accessories

Model numberel	Description
ADT901-kit	Test kit for ADT901 (hose barb fitting, hose, etc)
ADT901-HD	Holder for Additel 681 differential gauge or 672 differential calibrator.
ADT102	Adapters and fittings, 1/4NPT male to various male and female connection (26 pcs). More information shown on page 45.
ADT103	Adapters and fittings, 1/4NPT (1/4BSP, or M20X1.5) male to various female hand-tight quick connectors (10 pcs). More information shown on page 46.
ADT100-HTK	Hose test kit, 5 feet flexible hose, 8000 psi, 1/4NPT male to 1/4NPT (1/8NPT, 1/2NPT, 1/4BSP, or M20X1.5) female hand-tight quick connector. More information shown on page 47.
9901-901	Carrying Case for one ADT901 pump and two ADT681 gauges or ADT672 calibrators

Additel 912

Low Pressure Test Pump

- **Generate 95% vacuum to 60 psi (4 bar) pressure**
- **Portable**
- **Great stability and high resolution**
- **Minimal maintenance**
- **Hand-tight quick connectors**



OVERVIEW

The 912 Pneumatic Pressure Test Pump is a hand operated pressure pump designed to generate pressure from 95% vacuum to 60psi (4bar). A high-quality screw press is designed for fine pressure adjustment, with an adjustment resolution up to 0.1 Pa (0.001 mbar). The 912 is a very stable low pressure calibrator. It makes use of an isothermal bellows chamber which is designed for reducing the possible effects of environmental temperature change. Most pumps make use of a check valve (non-returning valve) and are not well insulated which will cause large fluctuations in pressure with a change in ambient temperature or when the unit is touched. The 912 does not use a check valve and is remarkably stable. Two hand-tight connectors installed on the pump allow easy connecting and disconnecting to the test pump without the need for PTFE tape or wrenches. The 912 is an ideal comparison test pump for low pressure application.

FEATURES

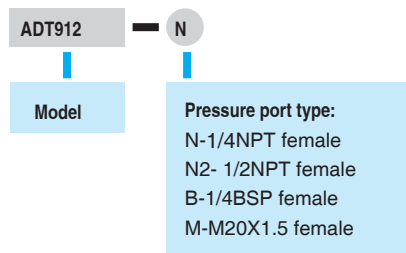
- **Portable:** Only 6.2 lb
- **Adjustment Resolution**
0.1Pa (0.001 mbar)
High-quality screw press for fine pressure adjustment
- **Great Stability**
Isothermal chamber: the pressure chamber is insulated to reduce the influence from environmental temperature changes
Specially designed bellows minimize leakage to guarantee excellent stability
Shut-off valve closes the air in the isothermal chamber during calibration
- **Durable and Minimal Maintenance**
Built-in gas-liquid isolator protects the pump from moisture and dirt
- **Easy-to-use**
- **Hand-tight Quick Connectors**
Allows easy connecting and disconnecting to the test pump without the need for PTFE tape or wrenches

SPECIFICATIONS

- **Media:** Air.
- **Generated Pressure Range**
95% vacuum to 60 psi (4bar) positive pressure
- **Adjustment Resolution**
0.1 Pa (0.001 mbar).
- **Material:** Ram/adapters: SST
Body: SST/aluminum
Seals: Buna-N
- **Connection**
Hand-tight connectors for both test gauge and reference gauge.
Test Gauge connection: 1/4NPT female, 1/4BSP female, or M20X1.5 female
Reference Gauge Connection: 1/4NPT female, 1/4BSP female, or M20X1.5 female
- **Dimensions**
Height: 5.51" (140 mm)
Base: 10.75" (273 mm) x 10.16" (258 mm)
- **Weight:** 6.2 lb (2.8 kg).
- **Warranty:** 1 year

ORDERING INFORMATION

■ Model Number



■ Accessories included

O-ring: 20 pcs
Manual: 1 pc

■ Optional Accessories

Model numberel	Description
ADT912-kit	Test kit for 912 (hose barb fitting, hose, etc)
ADT102	Adapters and fittings, 1/4NPT male to various male and female connection (26 pcs). More information shown on page 45.
ADT103	Adapters and fittings, 1/4NPT (1/4BSP, or M20X1.5) male to various female hand-tight quick connectors (10 pcs). More information shown on page 46.
ADT100-HTK	Hose test kit, 5 feet flexible hose, 8000 psi, 1/4NPT male to 1/4NPT (1/8NPT, 1/2NPT, 1/4BSP, or M20X1.5) female hand-tight quick connector. More information shown on page 47.
9904-912	Carrying Case for one 912 pump and two 681 gauges or 672 calibrators.

Additel 914

Handheld Pneumatic Pressure Test Pump



- **Generate 95% vacuum to 375 psi (25 bar) pressure**
- **Portable, only 3.3 lb**
- **Great stability and high resolution**
- **Minimal maintenance**
- **Hand-tight quick connectors**



OVERVIEW

The 914 Pneumatic Pressure Test Pump is a hand operated pressure pump designed to generate pressure from 95% vacuum to 375psi (25bar). A high-quality screw press is designed for fine pressure adjustment, with an adjustment resolution up to 10 Pa (0.1 mbar). A specially designed shut-off valve makes the pressure as stable as possible during calibration. A built-in gas-liquid isolator protects the pump from moisture and dirt to reduce the need for maintenance. Two hand-tight quick connectors installed on the pump allow easy connecting and disconnecting to the test pump without the need for PTFE tape or wrenches. The 914 is an ideal comparison test pump for pressure instruments calibration.

FEATURES

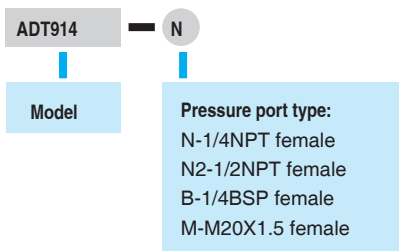
- **Portable:**
Only 3.3 lb
- **Adjustment Resolution**
10 Pa (0.1 mbar)
High-quality screw press for fine pressure adjustment
- **Great Stability**
A specially designed shut-off valve makes the pressure as stable as possible during calibration
- **Durable and Minimal Maintenance**
Built-in gas-liquid isolator protects the pump from moisture and dirt
- **Easy-to-use**
- **Hand-tight Quick Connectors**
Allows easy connecting and disconnecting to the test pump without the need for PTFE tape or wrenches

SPECIFICATIONS

- **Media:** Air.
- **Generated Pressure Range:** 95% vacuum to 375 psi (25 bar) positive pressure
- **Adjustment Resolution:** 10 Pa (0.1 mbar).
- **Material:** Ram/adapters: SST
Body: SST/aluminum
Seals: Buna-N
- **Connection**
Hand-tight connectors for both test gauge and reference gauge.
Test Gauge Connection: 1/4NPT female, 1/4BSP female, or M20X1.5 female
Reference Gauge Connection: 1/4NPT female, 1/4BSP female, or M20X1.5 female
- **Dimensions**
Height: 5.12" (130 mm)
Base: 9.45" (240 mm) x 4.72" (120 mm)
- **Weight:** 3.3 lb (1.5 kg).
- **Warranty:** 1 year

ORDERING INFORMATION

■ Model Number



■ Accessories included

O-ring: 20 pcs
Manual: 1 pc

■ Optional Accessories

Model numberel	Description
ADT102	Adapters and fittings, 1/4NPT male to various male and female connection (26 pcs). More information shown on page 45.
ADT103	Adapters and fittings, 1/4NPT (1/4BSP, or M20X1.5) male to various female hand-tight quick connectors (10 pcs). More information shown on page 46.
ADT100-HTK	Hose test kit, 5 feet flexible hose, 8000 psi, 1/4NPT male to 1/4NPT (1/8NPT, 1/2NPT, 1/4BSP, or M20X1.5) female hand-tight quick connector. More information shown on page 47.
9904-914	Carrying Case for one 914 pump and two 681 gauges or 672 calibrators

Additel 916

Pneumatic Pressure Test Pump



- **Generate 95% vacuum to 600 psi (40 bar) pressure**
- **Portable, only 5.9 lb**
- **Great stability and high resolution**
- **Minimal maintenance**
- **Hand-tight quick connectors**



OVERVIEW

The 916 Pneumatic Pressure Test Pump is a hand operated pressure pump designed to generate pressure from 95% vacuum to 600psi (40bar). A high-quality screw press is designed for fine pressure adjustment, with an adjustment resolution up to 10 Pa (0.1 mbar). A specially designed shut-off valve makes the pressure as stable as possible during calibration. A built-in gas-liquid isolator protects the pump from moisture and dirt to reduce the need for maintenance. Two hand-tight quick connectors installed on the pump allow easy connecting and disconnecting to the test pump without the need for PTFE tape or wrenches. The 916 is an ideal comparison test pump for pressure instruments calibration.

FEATURES

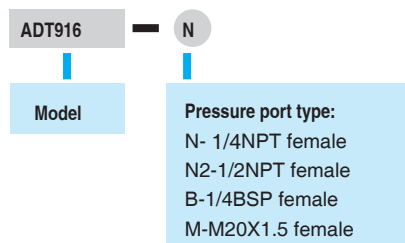
- **Portable**
Only 5.9 lb
- **Adjustment Resolution**
10 Pa (0.1 mbar)
High-quality screw press for fine pressure adjustment
- **Great Stability**
A specially designed shut-off valve makes the pressure as stable as possible during calibration.
- **Durable and Minimal Maintenance**
Built-in gas-liquid isolator protects the pump from moisture and dirt.
- **Easy-to-use**
- **Hand-tight Quick Connectors**
Allows easy connecting and disconnecting to the test pump without the need for PTFE tape or wrenches.

SPECIFICATIONS

- **Media:** Air.
- **Generated Pressure Range**
95% vacuum to 600 psi (40 bar) positive pressure
- **Pressure Resolution:** 10 Pa (0.1 mbar).
- **Material**
Ram/adapters: SST
Body: SST/aluminum
Seals: Buna-N
- **Connection**
Hand-tight connectors for both test gauge and reference gauge.
Test Gauge Connection: 1/4NPT female, 1/4BSP female, or M20X1.5 female
Reference Gauge Connection: 1/4NPT female, 1/4BSP female, or M20X1.5 female
- **Dimensions**
Height: 5.5" (140 mm)
Base: 12.4" (315 mm) x 7.8" (198 mm)
- **Weight:** 5.9 lb (2.7 kg).
- **Warranty:** 1 year

ORDERING INFORMATION

Model Number



Accessories included

O-ring: 20 pcs
Manual: 1 pc

Optional Accessories

Model numberel	Description
ADT102	Adapters and fittings, 1/4NPT male to various male and female connection (26 pcs). More information shown on page 45.
ADT103	Adapters and fittings, 1/4NPT (1/4BSP, or M20X1.5) male to various female hand-tight quick connectors (10 pcs). More information shown on page 46.
ADT100-HTK	Hose test kit, 5 feet flexible hose, 8000 psi, 1/4NPT male to 1/4NPT (1/8NPT, 1/2NPT, 1/4BSP, or M20X1.5) female hand-tight quick connector. More information shown on page 47.
9904-916	Carrying Case for one ADT916 pump and two ADT681 gauges or ADT672 calibrators

Additel 917

Pneumatic Pressure Test Pump



NEW



- Generate 95% vacuum to 1,000 psi (70 bar) pressure
- Portable, only 5.7 lb
- Great stability and high resolution
- Minimal maintenance
- Hand-tight quick connectors

OVERVIEW

The 917 Pneumatic Pressure Test Pump is a hand operated pressure pump designed to generate pressure from 95% vacuum to 1,000psi (70bar). A high-quality screw press is designed for fine pressure adjustment, with an adjustment resolution up to 10 Pa (0.1 mbar). A specially designed shut-off valve makes the pressure as stable as possible during calibration. A built-in gas-liquid isolator protects the pump from moisture and dirt to reduce the need for maintenance. Two hand-tight quick connectors installed on the pump allow easy connecting and disconnecting to the test pump without the need for PTFE tape or wrenches. The 917 is an ideal comparison test pump for pressure instruments calibration.

FEATURES

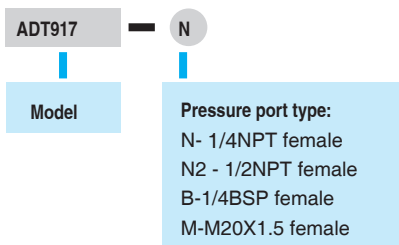
- **Portable**
Only 5.7 lb
- **High Resolution**
10 Pa (0.1 mbar)
High-quality screw press for fine pressure adjustment
- **Great Stability**
A specially designed shut-off valve makes the pressure as stable as possible during calibration.
- **Durable and Minimal Maintenance**
Built-in gas-liquid isolator protects the pump from moisture and dirt.
- **Easy-to-use**
Pressurized to desired pressure by the lever directly and make fine adjustment. No high-pressurized valve needed.
- **Hand-tight Quick Connectors**
Allows easy connecting and disconnecting to the test pump without the need for PTFE tape or wrenches.

SPECIFICATIONS

- **Media:** Air.
- **Generated Pressure Range**
95% vacuum to 1,000 psi (70 bar) positive pressure
- **Adjustment Resolution:** 10 Pa (0.1 mbar).
- **Material:** Ram/adapters: SST
Body: SST/aluminum
Seals: Buna-N
- **Connection:**
Hand-tight connectors for both test gauge and reference gauge.
Test Gauge Connection: 1/4NPT female, 1/4BSP female, or M20X1.5 female
Reference Gauge Connection: 1/4NPT female , 1/4BSP female, or M20X1.5 female
- **Dimensions:**
Height: 5.5" (140 mm)
Base: 12.4" (315 mm) x 7.8" (198 mm)
- **Weight:** 5.7 lb (2.6 kg).
- **Warranty:** 1 year

ORDERING INFORMATION

Model Number



Accessories included

- O-ring: 20 pcs
- Manual: 1 pc

Optional Accessories

Model numberel	Description
ADT102	Adapters and fittings, 1/4NPT male to various male and female connection (26 pcs). More information shown on page 45.
ADT103	Adapters and fittings, 1/4NPT (1/4BSP, or M20X1.5) male to various female hand-tight quick connectors (10 pcs). More information shown on page 46.
ADT100-HTK	Hose test kit, 5 feet flexible hose, 8000 psi, 1/4NPT male to 1/4NPT (1/8NPT, 1/2NPT, 1/4BSP, or M20X1.5) female hand-tight quick connector. More information shown on page 47.
9904-917	Carrying Case for one 917 pump and two 681 gauges or 672 calibrators

Additel 918

Pneumatic Pressure Test Pump



NEW



- **Generate 95% vacuum to 1,500psi(100 bar) pressure**
- **Portable, only 5.7 lb**
- **Great stability and high resolution**
- **Minimal maintenance**
- **Hand-tight quick connectors**

OVERVIEW

The 918 Pneumatic Pressure Test Pump is a hand operated pressure pump designed to generate pressure from 95% vacuum to 1,500psi (100bar). A high-quality screw press is designed for fine pressure adjustment, with an adjustment resolution up to 10 Pa (0.1 mbar). A specially designed shut-off valve makes the pressure as stable as possible during calibration. A built-in gas-liquid isolator protects the pump from moisture and dirt to reduce the need for maintenance. Two hand-tight quick connectors installed on the pump allow easy connecting and disconnecting to the test pump without the need for PTFE tape or wrenches. The 918 is an ideal comparison test pump for pressure instruments calibration.

FEATURES

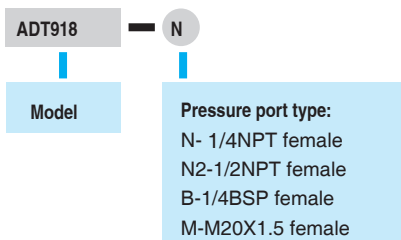
- **Portable**
Only 5.7 lb
- **High Resolution**
0.001psi (10 Pa , 0.1 mbar)
High-quality screw press for fine pressure adjustment
- **Great Stability**
A specially designed shut-off valve makes the pressure as stable as possible during calibration.
- **Durable and Minimal Maintenance**
Built-in gas-liquid isolator protects the pump from moisture and dirt.
- **Easy-to-use**
Pressurize to desired pressure by the pump lever directly, and then make fine adjustment. No high-pressure valve needed.
- **Hand-tight Quick Connectors**
Allows easy connection and disconnection to the test pump without the need for PTFE tape or wrenches.

SPECIFICATIONS

- **Media:** Air.
- **Generated Pressure Range**
95% vacuum to 1,500 psi (100 bar) positive pressure
- **Adjustment Resolution:** 0.001 psi (10 Pa , 0.1 mbar).
- **Material:** Ram/adapters: SST
Body: SST/aluminum
Seals: Buna-N, FTM
- **Connection:** Hand-tight connectors for both test gauge and reference gauge.
Test Gauge Connection: 1/4NPT female, 1/2NPT female, 1/4BSP female, or M20X1.5 female
Reference Gauge Connection: 1/4NPT female , 1/2NPT female, 1/4BSP female, or M20X1.5 female
- **Dimensions:**
Height: 5.5" (140 mm)
Base: 12.4" (315 mm) x 7.8" (198 mm)
- **Weight:** 5.7 lb (2.6 kg).
- **Warranty:** 1 year

ORDERING INFORMATION

■ Model Number



■ Accessories included

O-ring: 20 pcs
Manual: 1 pc

■ Optional Accessories

Model number ¹	Description
ADT102	Adapters and fittings, 1/4NPT male to various male and female connection (26 pcs). More information shown on page 45.
ADT103	Adapters and fittings, 1/4NPT (1/4BSP, or M20X1.5) male to various female hand-tight quick connectors (10 pcs). More information shown on page 46.
ADT100-HTK	Hose test kit, 5 feet flexible hose, 8000 psi, 1/4NPT male to 1/4NPT (1/8NPT, 1/2NPT, 1/4BSP, or M20X1.5) female hand-tight quick connector. More information shown on page 47.
9904-918	Carrying Case for one 918 pump and two 681 gauges or 672 calibrators

Additel 919A

High Pressure Test Pump



- Generate 95% vacuum to 2,000 psi (140 bar) pressure
- Generate 2,000 psi (140 bar) in 30 seconds
- Minimal maintenance
- Hand-tight quick connectors
- First one in the world



OVERVIEW

The 919A High Pressure Test Pump is a hand operated pressure pump designed to generate pressure from 95% vacuum to 2,000psi (140bar). With a long lever, it just takes 30 seconds to reach 2,000 psi (140 bar). A high-quality screw press is designed for fine pressure adjustment, with an adjustment resolution up to 0.001 psi (10 Pa , 0.1 mbar). A specially designed shut-off valve makes the pressure as stable as possible during calibration. A built-in gas-liquid isolator protects the pump from moisture and dirt to reduce the need for maintenance. The residual liquid in the pump introduced from the devices under test will be collected and then pushed out during pressure release. Two hand-tight quick connectors installed on the pump allow easy connecting and disconnecting to the test pump without the need for PTFE tape or wrenches. The 919A is an ideal comparison test pump for pressure instruments calibration.

FEATURES

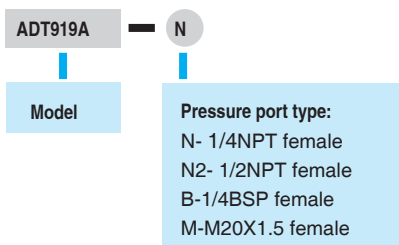
- **High Efficiency**
Generate 2,000 psi (140 bar) in 30 seconds.
- **Adjustment Resolution**
0.001 psi (10 Pa , 0.1 mbar).
High-quality screw press for fine pressure adjustment.
- **Great Stability**
A specially designed shut-off valve makes the pressure as stable as possible during calibration.
- **Durable and Minimal Maintenance**
Built-in gas-liquid isolator protects the pump from moisture and dirt.
The residual liquid in the pump introduced from devices under test will be collected and then pushed out and collected during pressure release.
Anticorrosive and wear resistant material are used to improve the reliability further.
- **Hand-tight Quick Connectors**
Allows easy connecting and disconnecting to the test pump without the need for PTFE tape or wrenches.

SPECIFICATIONS

- **Media:** Air.
- **Generated Pressure Range:** 95% vacuum to 2,000 psi (140 bar) positive pressure
- **Adjustment Resolution:** 10 Pa (0.1 mbar/0.0015 psi)
- **Material:** Ram/adapters: SST
Body: SST/aluminum
Seals: Buna-N
- **Connection**
Hand-tight connectors for both test gauge and reference gauge.
Test Gauge Connection: 1/4NPT female, 1/2NPT female, 1/4BSP female, or M20X1.5 female
Reference Gauge Connection: 1/4NPT female, 1/2NPT female , 1/4BSP female, or M20X1.5 female
- **Dimensions:**
Height: 7.00" (178 mm);
Base: 21.26" (540 mm) x 10.63" (270 mm).
- **Weight:** 14.3 lb (6.5 kg).
- **Warranty:** 1 year

ORDERING INFORMATION

Model Number



Optional Accessories

Model number ¹	Description
ADT102	Adapters and fittings, 1/4NPT male to various male and female connection (26 pcs). More information shown on page 45.
ADT103	Adapters and fittings, 1/4NPT (1/4BSP, or M20X1.5) male to various female hand-tight quick connectors (10 pcs). More information shown on page 46.
ADT100-HTK	Hose test kit, 5 feet flexible hose, 8000 psi, 1/4NPT male to 1/4NPT (1/8NPT, 1/2NPT, 1/4BSP, or M20X1.5) female hand-tight quick connector. More information shown on page 47.
9909-919A	Carrying Case for one 919A pump and two 681 gauges or 672 calibrators

Accessories included

- O-ring: 20 pcs
- Manual: 1 pc

Additel 920

High Pressure Test Pump



NEW

- Generate 95% vacuum to 3,000 psi (200 bar) pressure
- Generate 3,000 psi (200 bar) in 40 seconds
- Minimal maintenance
- Hand-tight quick connectors
- First one in the world



OVERVIEW

The 920 High Pressure Test Pump is a hand operated pressure pump designed to generate pressure from 95% vacuum to 3,000psi (200bar). With a long lever, it just takes 40 seconds to reach 3,000 psi (200 bar). A high-quality screw press is designed for fine pressure adjustment, with an adjustment resolution up to 10 Pa (0.1 mbar). A specially designed shut-off valve makes the pressure as stable as possible during calibration. A built-in gas-liquid isolator protects the pump from moisture and dirt to reduce the need for maintenance. The residual liquid in the pump introduced from devices under test will be pushed out and collected during pressure release. Two hand-tight quick connectors installed on the pump allow easy connecting and disconnecting to the test pump without the need for PTFE tape or wrenches. The 920 is an ideal comparison test pump for pressure instruments calibration.

FEATURES

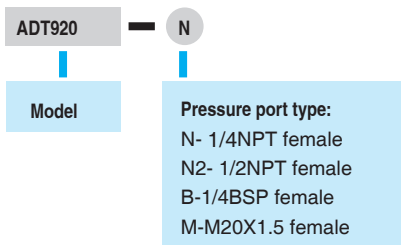
- **High Efficiency**
Generate 3,000 psi (200 bar) in 40 seconds.
- **Adjustment Resolution**
0.001 psi (10 Pa, 0.1 mbar).
High-quality screw press for fine pressure adjustment.
- **Great Stability**
A specially designed shut-off valve makes the pressure as stable as possible during calibration.
- **Durable and Minimal Maintenance**
Built-in gas-liquid isolator protects the pump from moisture and dirt.
The residual liquid in the pump introduced from devices under test will be collected and then pushed out and collected during pressure release.
Anticorrosive and wear resistant material are used to improve the reliability further.
- **Hand-tight Quick Connectors**
Allows easy connecting and disconnecting to the test pump without the need for PTFE tape or wrenches.

SPECIFICATIONS

- **Media:** Air.
- **Generated Pressure Range**
95% vacuum to 3,000 psi (200 bar) positive pressure
- **Adjustment Resolution:** 10 Pa (0.1 mbar/0.0015 psi)
- **Material:** Ram/adapters: SST
Body: SST/aluminum
Seals: Buna-N, F357
- **Connection**
Hand-tight connectors for both test gauge and reference gauge.
Test Gauge Connection: 1/4NPT female, 1/2NPT female, 1/4BSP female, or M20X1.5 female
Reference Gauge Connection: 1/4NPT female, 1/2NPT female, 1/4BSP female, or M20X1.5 female
- **Dimensions:**
Height: 7.00" (178 mm);
Base: 21.26" (540 mm) x 10.63" (270 mm).
- **Weight:** 14.3 lb (6.5kg).
- **Warranty:** 1 year

ORDERING INFORMATION

Model Number



Accessories included

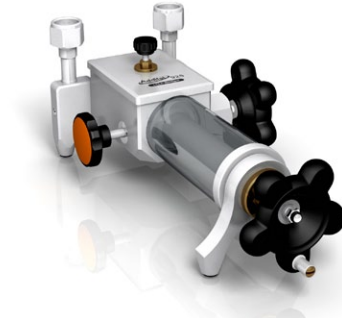
- O-ring: 20 pcs
- Manual: 1 pc

Optional Accessories

Model numberel	Description
ADT102	Adapters and fittings, 1/4NPT male to various male and female connection (26 pcs). More information shown on page 45.
ADT103	Adapters and fittings, 1/4NPT (1/4BSP, or M20X1.5) male to various female hand-tight quick connectors (10 pcs). More information shown on page 46.
ADT100-HTK	Hose test kit, 5 feet flexible hose, 8000 psi, 1/4NPT male to 1/4NPT (1/8NPT, 1/2NPT, 1/4BSP, or M20X1.5) female hand-tight quick connector. More information shown on page 47.
9909-920	Carrying Case for one 920 pump and two 681 gauges or 672 calibrators

Handheld Hydraulic Pressure Test Pump

- Generate 85% vacuum to 6,000 psi (400 bar) pressure
- Portable, only 3.7 lb
- Minimal maintenance
- Increase and decrease pressure smoothly
- Hand-tight quick connectors



OVERVIEW

The 925 Hydraulic Pressure Test Pump is a hand operated pressure pump designed to generate pressure from 85% vacuum to 6,000psi (400bar). With the patented screw press technology, the high pressure can be easily generated, as well as increased and decreased smoothly. With no check valve (non-returning valve), the 925 avoids the troublesome leakage issues that is usually experienced with most hand pumps and allows for minimal maintenance. Two hand-tight quick connectors installed on the pump allow easy connecting and disconnecting to the test pump without the need for PTFE tape or wrenches. The 925 is an ideal comparison test pump for calibrating pressure measuring instruments such as test gauges, indicators or transducers in the field or laboratory.

FEATURES

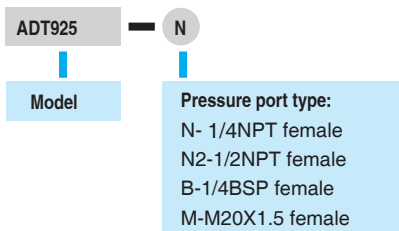
- **Portable**
Only 3.7 lb
- **Durable and Minimal Maintenance**
Patented screw press technology, without non-returning valve inside that is usually used on troublesome hand pumps.
- **Easy-to-use**
The high pressure can be generated easily, as well as increased and decreased smoothly.
- **Extremely Low Leakage**
Patented screw press technology, replaces troublesome check valves (non-returning valve) used in most hand pumps which practically eliminates leakage.
- **Hand-tight Quick Connectors**
Allows easy connecting and disconnecting to the test pump without the need for PTFE tape or wrenches.

SPECIFICATIONS

- **Media:** Oil or deionized water.
(Oil is default media liquid. Pump with water as media to be ordered specifically)
- **Pressure Range**
85% vacuum to 6,000 psi (400 bar) positive pressure.
- **Material:** Ram/adapters: SST
Body: SST/aluminum
Seals: Buna-N
- **Connection**
Hand-tight connectors for both test gauge and reference gauge.
Test Gauge Connection: 1/4NPT female, 1/4BSP female, or M20X1.5 female
Reference Gauge Connection: 1/4NPT female, 1/4BSP female, or M20X1.5 female
- **Dimensions:** Height: 4.72" (120 mm)
Base: 9.84" (250 mm) x 5.51" (140 mm)
- **Weight:** 3.7 lb (1.7 kg).
- **Warranty:** 1 year

ORDERING INFORMATION

■ Model Number



■ Accessories included

Diethylhexyl Sebacate oil, 1 bottle (250 ml)*
O-ring: 20 pcs
Manual: 1 pc

* When water media is not requested

■ Optional Accessories

Model numberel	Description
9201	Oil, Diethylhexyl Sebacate, 1 liter (1 quart)
ADT102	Adapters and fittings, 1/4NPT male to various male and female connection (26 pcs). More information shown on page 45.
ADT103	Adapters and fittings, 1/4NPT (1/4BSP, or M20X1.5) male to various female hand-tight quick connectors (10 pcs). More information shown on page 46.
ADT100-HTK	Hose test kit, 5 feet flexible hose, 8000 psi, 1/4NPT male to 1/4NPT (1/8NPT, 1/2NPT, 1/4BSP, or M20X1.5) female hand-tight quick connector. More information shown on page 47.
9901-925	Carrying Case for one 925 pump and two 681 gauges or 672 calibrators

Additel 927

Hydraulic Pressure Test Pump



- **Generate 85% vacuum to 10,000psi (700bar) pressure**
- **Portable, only 7 lb**
- **Minimal maintenance**
- **Increase and decrease pressure smoothly**
- **Hand-tight quick connectors**



OVERVIEW

The 927 Hydraulic Pressure Test Pump is a hand operated pressure pump designed to generate pressure from 85% vacuum to 10,000 psi (700bar). With the patented screw press technology, high pressures can be easily generated, as well as increased and decreased smoothly. With no check valve (non-returning valve), the 927 avoids the troublesome leakage issues that is usually experienced with most hand pumps and allows for minimal maintenance. Two hand-tight quick connectors installed on the pump allow easy connecting and disconnecting to the test pump without the need for PTFE tape or wrenches. The 927 is an ideal comparison test pump for calibrating pressure measuring instruments such as test gauges, indicators or transducers in the field or laboratory.

FEATURES

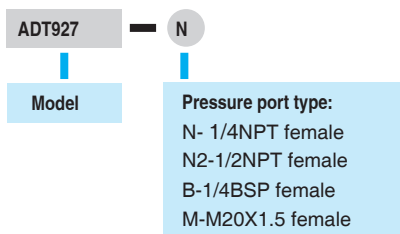
- **Portable**
Only 7 lb
- **Durable and Minimal Maintenance**
Patented screw press technology, without non-returning valve inside that is usually used on troublesome hand pumps.
- **Easy-to-use**
The high pressure can be generated easily, as well as increased and decreased smoothly.
- **Extremely Low Leakage**
Patented screw press technology, replaces troublesome check valves (non-returning valve) used in most hand pumps which practically eliminates leakage.
- **Hand-tight Quick Connectors**
Allows easy connecting and disconnecting to the test pump without the need for PTFE tape or wrenches.

SPECIFICATIONS

- **Media:** Oil or deionized water.
(Oil is default media liquid. Pump with water as media to be ordered specifically)
- **Generated Pressure Range**
85% vacuum to 10,000psi (700bar) positive pressure.
- **Material:** Ram/adapters: SST
Body: SST/aluminum
Seals: Buna-N
- **Connection**
Hand-tight connectors for both test gauge and reference gauge.
Test Gauge Connection: 1/4NPT female, 1/4BSP female, or M20X1.5 female
Reference Gauge Connection: 1/4NPT female, 1/4BSP female, or M20X1.5 female
- **Dimensions:** Height: 5.31" (135 mm)
Base: 11.42" (290 mm) x 7.80" (198 mm).
- **Weight:** 7 lb (3.2 kg).
- **Warranty:** 1 year

ORDERING INFORMATION

■ Model Number



■ Accessories included

Diethylhexyl Sebacate oil, 1 bottle (250 ml)*
O-ring: 20 pcs
Manual: 1 pc

* When water media is not requested

■ Optional Accessories

Model numberel	Description
9201	Oil, Diethylhexyl Sebacate, 1 liter (1 quart)
ADT102	Adapters and fittings, 1/4NPT male to various male and female connection (26 pcs). More information shown on page 45.
ADT103	Adapters and fittings, 1/4NPT (1/4BSP, or M20X1.5) male to various female hand-tight quick connectors (10 pcs). More information shown on page 46.
ADT100-HTK	Hose test kit, 5 feet flexible hose, 8000 psi, 1/4NPT male to 1/4NPT (1/8NPT, 1/2NPT, 1/4BSP, or M20X1.5) female hand-tight quick connector. More information shown on page 47.
9904-927	Carrying Case for one 927 pump and two 681 gauges or 672 calibrators

Hydraulic High Pressure Calibration Pump

- Generate 85% vacuum to 15,000psi (1,000bar) pressure
- Minimal maintenance
- Increase and decrease pressure smoothly
- Three pressure ports
- Hand-tight quick connectors



OVERVIEW

The 936 Hydraulic High Pressure Test Pump is a hand operated pressure pump designed to generate pressure from 85% vacuum to 15,000 psi (1,000bar). With the patented screw press technology, high pressures can be easily generated, as well as increased and decreased smoothly. A specially designed shut-off valve makes the pressure as stable as possible during calibration. With no check valve (non-returning valve), the 936 avoids the troublesome leakage issues that is usually experienced with hand pumps and allows for minimal maintenance. Three hand-tight quick connectors installed on the pump allow easy connecting and disconnecting to the test pump without the need for PTFE tape or wrenches. The 936 is an ideal comparison test pump for calibrating pressure measuring instruments such as test gauges, indicators or transducers in the laboratory.

FEATURES

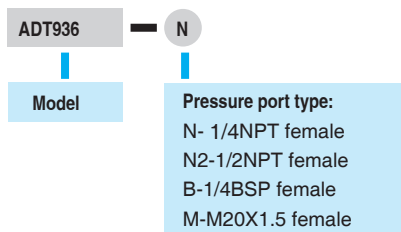
- **High Pressure**
Generates pressure up to 15,000 psi (1000 bar)
- **Durable and Minimal Maintenance**
Patented screw press technology, without non-returning valve inside that is usually used on troublesome hand pumps.
- **Easy-to-use**
High pressures can be generated easily, as well as increased and decreased smoothly.
- **Extremely Low Leakage**
Patented screw press technology replaces troublesome check valves (non-returning valve) in most hand pumps which practically eliminates leakage.
- **Hand-tight Quick Connectors**
Allows easy connecting and disconnecting to the test pump without the need for PTFE tape or wrenches.

SPECIFICATIONS

- **Media:** Oil
- **Pressure Range**
85% vacuum to 15,000psi (1,000bar) positive.
- **Material**
Ram/adapters: SST
Body: SST/aluminum
Seals: Buna-N
- **Connection**
Hand-tight connectors for both test gauge and reference gauge(s).
Test Gauge Connection: 1/4NPT female, 1/4BSP female, or M20X1.5 female
Reference Gauge Connection: 1/4NPT female, 1/4BSP female, or M20X1.5 female
- **Dimensions**
Height: 9.1" (230 mm)
Base: 20.5" (520 mm) x 14.2" (360 mm)
- **Weight:** 35.2 lb (16 kg).
- **Warranty:** 1 year

ORDERING INFORMATION

Model Number



Accessories included

Diethylhexyl Sebacate oil, 1 bottle (250 ml)
O-ring: 20 pcs Manual: 1 pc

Optional Accessories

Model numberel	Description
9201	Oil, Diethylhexyl Sebacate, 1 liter (1 quart)
ADT102	Adapters and fittings, 1/4NPT male to various male and female connection (26 pcs). More information shown on page 45.
ADT103	Adapters and fittings, 1/4NPT (1/4BSP, or M20X1.5) male to various female hand-tight quick connectors (10 pcs). More information shown on page 46.
9908	Carrying case for 936, 937, 938 or 949.

Additel 937

Hydraulic High Pressure Calibration Pump

- Generate 85% vacuum to 15,000psi (1,000bar) pressure
- Compatible to phosphoric acid ester fluid and Skydrol Oil
- Increase and decrease pressure smoothly
- Three pressure ports
- Hand-tight quick connectors



OVERVIEW

The 937 Hydraulic High Pressure Calibration Pump is a hand operated pressure pump designed for calibrating pressure measuring instruments with phosphoric acid ester fluid and Skydrol oil in the range from 85% vacuum to 15,000 psi (1000bar). With the patented screw press technology, high pressures can be easily generated, increased and decreased smoothly. A specially designed shut-off valve makes the pressure as stable as possible during calibration. With no check valve (non-returning valve), the 937 avoids the troublesome leakage issues that is usually experienced with hand pumps and allows for minimal maintenance. Two hand-tight quick connectors installed on the pump allow easy connecting and disconnecting to the test pump without the need for PTFE tape or wrenches. The 937 is an ideal comparison test pump for calibrating pressure measuring instruments such as test gauges, indicators or transducers in the laboratory.

FEATURES

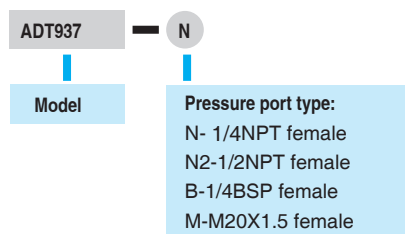
- **High Pressure**
Generates pressure up to 15,000 psi (1,000 bar)
- **Durable and Minimal Maintenance**
Patented screw press technology, with no check valve (non-returning valve) inside that is usually used on troublesome hand pumps causing leakage.
- **Easy-to-use**
High pressures can be generated easily, as well as increased and decreased smoothly.
- **Hand-tight Quick Connectors**
Allows easy connecting and disconnecting to the test pump without the need for PTFE tape or wrenches.

SPECIFICATIONS

- **Media:** Oil, compatible to phosphoric acid ester fluid and Skydrol Oil
- **Pressure Range**
85% vacuum to 15,000 psi (1,000bar) positive.
- **Material:** Ram/adapters: SST
Body: SST/aluminum
Seals: FKM
- **Connection**
Hand-tight connectors for both test gauge and reference gauge(s).
Test Gauge Connection: 1/4NPT female, 1/4BSP female, or M20X1.5 female
Reference Gauge Connection: 1/4NPT female, 1/4BSP female, or M20X1.5 female
- **Dimensions**
Height: 9.1" (230 mm)
Base: 20.5" (520 mm) x 14.2" (360 mm)
- **Weight:** 35.2 lb (16 kg).
- **Warranty:** 1 year

ORDERING INFORMATION

Model Number



Accessories included

O-ring: 20 pcs Manual: 1 pc

Optional Accessories

Model numberel	Description
9201	Oil, Diethylhexyl Sebacate, 1 liter (1 quart)
ADT102	Adapters and fittings, 1/4NPT male to various male and female connection (26 pcs). More information shown on page 45.
ADT103	Adapters and fittings, 1/4NPT (1/4BSP, or M20X1.5) male to various female hand-tight quick connectors (10 pcs). More information shown on page 46.
9908	Carrying case for 936, 937, 938 or 949.

Hydraulic High Pressure Calibration Pump

- Generate 85% vacuum to 15,000psi (1,000bar) pressure
- Oil-free pressure instruments
- Minimal maintenance
- Easy-to-use
- Three pressure ports
- Hand-tight quick connectors



OVERVIEW

The 938 Hydraulic High Pressure Test Pump is specially designed for calibrating oil-free pressure measuring instruments in the range of 85% vacuum to 15,000 psi (1,000 bar). All parts used in the pump have been carefully cleaned to remove oil. The pump uses water as the media. With the patented screw press technology, high pressures can be easily generated, as well as increased and decreased smoothly. A specially designed shut-off valve makes the pressure as stable as possible during calibration. With no check valve (non-returning valve), the 938 avoids the troublesome leakage issues that is usually experienced with hand pumps and allows for minimal maintenance. Three hand-tight connectors installed on the pump allow easy connecting and disconnecting to the test pump without the need for PTFE tape or wrenches. The 938 is an ideal comparison test pump for calibrating oil-free pressure measuring instruments such as test gauges, indicators or transducers in the laboratory.

FEATURES

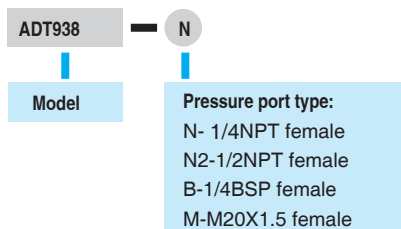
- **High Pressure**
Generates pressure up to 15,000 psi (1,000 bar)
- **Durable and Minimal Maintenance**
Patented screw press technology, without non-returning valve inside that is usually used on troublesome hand pumps.
- **Easy-to-use**
With the patented screw press technology, high pressures can be generated easily, as well as increased and decreased smoothly
- **Extremely Low Leakage**
Patented screw press technology replaces troublesome check valves (non-returning valve) in most hand pumps which practically eliminates leakage.
- **Hand-tight Quick Connectors**
Allows easy connecting and disconnecting to the test pump without the need for PTFE tape or wrenches.

SPECIFICATIONS

- **Media:** Deionized water
- **Pressure Range**
85% vacuum to 15,000psi (1,000bar) positive pressure.
- **Material**
Ram/adapters: SST
Body: SST/aluminum
Seals: Buna-N
- **Connection**
Hand-tight connectors for both test gauge and reference gauge.
Test Gauge Connection: 1/4NPT female, 1/4BSP female, M20X1.5 female
Reference Gauge Connection: 1/4NPT female, 1/4BSP female, or M20X1.5 female
- **Dimensions**
Height: 9.1" (230 mm)
Base: 20.5" (520 mm) x 14.2" (360 mm)
- **Weight:** 35.2 lb (16 kg).
- **Warranty:** 1 year

ORDERING INFORMATION

■ Model Number



■ Accessories included

O-ring: 20 pcs
Manual: 1 pc

■ Optional Accessories

Model number ^{el}	Description
ADT102	Adapters and fittings, 1/4NPT male to various male and female connection (26 pcs). More information shown on page 45.
ADT103	Adapters and fittings, 1/4NPT (1/4BSP, or M20X1.5) male to various female hand-tight quick connectors (10 pcs). More information shown on page 46.
9908	Carrying case for 936, 937, 938 or 949.



Additel 949

Hydraulic Ultra-high Pressure Test Pump

- **Generate 85% vacuum to 37,500psi (2,500bar) pressure**
- **Minimal maintenance**
- **Easy-to-use**
- **Three pressure ports**



OVERVIEW

The 949 Hydraulic Ultra-high Pressure Test Pump is a hand operated pressure pump designed to generate pressure up to 37,500 psi (2500 bar). With the patented screw press technology, high pressures can be easily generated, increased and decreased smoothly. A specially designed shut-off valve makes the pressure as stable as possible during calibration. With no non-returning valve, the 949 avoids the troublesome leakage issues that is usually experienced with hand pumps and allows for minimal maintenance. The 949 is an ideal comparison test pump for calibrating ultra-high pressure measuring instruments such as test gauges, indicators or transducers in the laboratory.

FEATURES

- **Generate Ultra-high Pressure**
Generate pressure up to 37,500 psi (2500 bar)
- **Durable and Minimal Maintenance**
Patented screw press technology, without non-returning valve inside that is usually used on troublesome hand pumps.
- **Easy-to-use**
With the patented screw press technology, high pressures can be generated easily, as well as increased and decreased smoothly.
- **Extremely Low Leakage**
Patented screw press technology replaces troublesome, check valves (non-returning valve) found in most hand pumps which practically eliminates leakage.

SPECIFICATIONS

- **Media:** Oil
- **Pressure Range**
85% vacuum to 37,500psi (2,500bar) positive pressure.
- **Material**
Ram/adapters: SST
Body: SST/aluminum
Seals: Buna-N
- **Connection**
Test Gauge Connection: Positional Autoclave F-250-C, 9/16" - 18 UNF female
Reference Gauge Connection: Positional Autoclave F-250-C, 9/16" - 18 UNF female
1/2BSP female and M20X1.5 female connections are available upon request.
- **Dimensions:** Height: 9.1" (230 mm)
Base: 20.5" (520 mm) x 14.2" (360 mm)
- **Weight:** 35.2 lb (16 kg).
- **Warranty:** 1 year

ORDERING INFORMATION

Model Number

ADT949 — AF

Model

Pressure port type:
AF-Autoclave F-250-C female
B-1/2BSP female
X-Customize

Accessories included

Diethylhexyl Sebacate oil: 1 bottle (250 ml)
Manual: 1 pc

Optional Accessories

Model numberel	Description
9201	Oil, Diethylhexyl Sebacate, 1 liter (1 quart)
ADT104	Adapters and fittings, 1/4HP male to various male and female connectors (17 pcs). More information shown on page 47.
9908	Carrying case for 936, 937, 938 or 949.

Pressure Manifold, Hoses, Adapters and Fittings

Additel 12X series Pressure Manifolds

The 12X series pressure manifolds are designed for expanding pressure test ports during pressure calibration. The Additel 121 and 125 pressure manifolds are used for pneumatic pressure calibration up to 3000 psi (200bar), while the Additel 123 and 126 manifolds are compatible to hydraulic pressure applications up to 10,000 psi (700 bar). A filter is built-in with the 121 and 125 pneumatic pressure manifolds to prevent contamination introduced by devices under test. There are four hand-tight quick connectors pre-installed on each manifold. The manifold arms of the 125 and 126 are foldable to allow the user to adjust the position of the DUTs. Additel 12X series pressure manifolds allow you to connect without the use of wrenches or Teflon tape which increases your productivity when using calibration pumps, pressure controllers, dead weight testers, or piston gauges.

121 series Pressure Manifolds / Pneumatic, -15psi to 3000psi (-1 to 200 bar)

NEW



Model	Description
ADT121-N	1/4NPT Female to four 1/4NPT Female hand-tight quick connectors
ADT121-N2	1/2NPT Female to four 1/2NPT Female hand-tight quick connectors
ADT121-M	M20x1.5 Female to four M20x1.5 Female hand-tight quick connectors
ADT121-B	1/4BSP Female to four 1/4BSP Female hand-tight quick connectors

123 series Pressure Manifolds / Hydraulic, -15psi to 10000 psi (-1 to 700 bar)

NEW



Model	Description
ADT123-N	1/4NPT Female to four 1/4NPT Female hand-tight quick connectors
ADT123-N2	1/2NPT Female to four 1/2NPT Female hand-tight quick connectors
ADT123-M	M20x1.5 Female to four M20x1.5 Female hand-tight quick connectors
ADT123-B	1/4BSP Female to four 1/4BSP Female hand-tight quick connectors

125 series Foldable Pressure Manifolds / Pneumatic, -15psi to 3000psi (-1 to 200 bar)

NEW



Model	Description
ADT125-N	1/4NPT Female to four 1/4NPT Female hand-tight quick connectors
ADT125-N2	1/2NPT Female to four 1/2NPT Female hand-tight quick connectors
ADT125-M	M20x1.5 Female to four M20x1.5 Female hand-tight quick connectors
ADT125-B	1/4BSP Female to four 1/4BSP Female hand-tight quick connectors

126 series Foldable Pressure Manifolds / Hydraulic, -15psi to 10000 psi (-1 to 700 bar)

NEW



Model	Description
ADT126-N	1/4NPT Female to four 1/4NPT Female hand-tight quick connectors
ADT126-N2	1/2NPT Female to four 1/2NPT Female hand-tight quick connectors
ADT126-M	M20x1.5 Female to four M20x1.5 Female hand-tight quick connectors
ADT126-B	1/4BSP Female to four 1/4BSP Female hand-tight quick connectors

Note: A test hose (male adapter to male adapter) is included with every Additel 12X pressure manifold.

Pressure Manifold, Hoses, Adapters and Fittings



Additel 102 (Designed for all pumps except Additel 949 pump)



Additel 102

ADT102

1/4NPT male to various connectors as follows (26pcs, case included)

Model	Description	Max Pressure	Picture
ADT100-NPTM4-BSPM8	Adapter, 1/4NPT male to 1/8BSP male	15,000 psi	
ADT100-NPTM4-BSPM4	Adapter, 1/4NPT male to 1/4BSP male	15,000 psi	
ADT100-NPTM4-BSPM2	Adapter, 1/4NPT male to 1/2BSP male	15,000 psi	
ADT100-NPTM4-BSPM3	Adapter, 1/4NPT male to 3/8BSP male	15,000 psi	
ADT100-NPTM4-M10M	Adapter, 1/4NPT male to M10X1.0 male	15,000 psi	
ADT100-NPTM4-M14M	Adapter, 1/4NPT male to M14X1.5 male	15,000 psi	
ADT100-NPTM4-M20M	Adapter, 1/4NPT male to M20X1.5 male	15,000 psi	
ADT100-NPTM4-NPTM8	Adapter, 1/4NPT male to 1/8NPT male	15,000 psi	
ADT100-NPTM4-NPTM4	Adapter, 1/4NPT male to 1/4NPT male	15,000 psi	
ADT100-NPTM4-NPTM2	Adapter, 1/4NPT male to 1/2NPT male	15,000 psi	
ADT100-NPTM4-NPTM3	Adapter, 1/4NPT male to 3/8NPT male	15,000 psi	
ADT100-NPTM4-BSPF8	Adapter, 1/4NPT male to 1/8BSP female	15,000 psi	
ADT100-NPTM4-BSPF4	Adapter, 1/4NPT male to 1/4BSP female	15,000 psi	
ADT100-NPTM4-BSPF2	Adapter, 1/4NPT male to 1/2BSP female	15,000 psi	
ADT100-NPTM4-BSPF3	Adapter, 1/4NPT male to 3/8BSP female	15,000 psi	
ADT100-NPTM4-M10F	Adapter, 1/4NPT male to M10X1.0 female	15,000 psi	
ADT100-NPTM4-M14F	Adapter, 1/4NPT male to M14X1.5 female	15,000 psi	
ADT100-NPTM4-M20F	Adapter, 1/4NPT male to M20X1.5 female	15,000 psi	
ADT100-NPTM4-NPTF8	Adapter, 1/4NPT male to 1/8NPT female	15,000 psi	
ADT100-NPTM4-NPTF4	Adapter, 1/4NPT male to 1/4NPT female	15,000 psi	
ADT100-NPTM4-NPTF2	Adapter, 1/4NPT male to 1/2NPT female	15,000 psi	
ADT100-NPTM4-NPTF3	Adapter, 1/4NPT male to 3/8NPT female	15,000 psi	
ADT100-HTK-4	Hose Test Kit, 5 feet flexible hose, 8000 psi, 1/4NPT male to 1/4NPT female hand tight quick connector	8,000 psi	
ADT100 -HTK-4-1K	Hose Test Kit, 5 feet flexible hose, 1000 psi, 1/4NPT male to 1/4NPT female hand tight quick connector	1,000 psi	
ADT100-NPTM4-NPTF4RQ	Adapter, 1/4NPT male to right angle 1/4NPT female hand-tight quick connector	15000psi	
ADT100-NPTM4-BARB	Adapter, 1/4NPT male to hose barb	150psi	

Don't need the entire kit? Order individual adapters with the above part numbers.

Pressure Manifold, Hoses, Adapters and Fittings



Additel 103 Series (Designed for all pumps except Additel 949 pump)

ADT103-NPT (Hand-tight quick connectors)

1/4NPT male to various hand-tight quick connectors (10pcs, case included)



Additel 103-NPT

Model	Description	Max Pressure	Picture
ADT100-NPTM4-NPTF8Q	Adapters, 1/4NPT male to 1/8NPT female	15,000 psi	
ADT100-NPTM4-NPTF4Q	Adapters, 1/4NPT male to 1/4NPT female	15,000 psi	
ADT100-NPTM4-NPTF2Q	Adapters, 1/4NPT male to 1/2NPT female	15,000 psi	
ADT100-NPTM4-BSPF8Q	Adapters, 1/4NPT male to 1/8BSP female	15,000 psi	
ADT100-NPTM4-BSPF4Q	Adapters, 1/4NPT male to 1/4BSP female	15,000 psi	
ADT100-NPTM4-BSPF3Q	Adapters, 1/4NPT male to 3/8BSP female	15,000 psi	
ADT100-NPTM4-BSPF2Q	Adapters, 1/4NPT male to 1/2BSP female	15,000 psi	
ADT100-NPTM4-M10FQ	Adapters, 1/4NPT male to M10x1.0 female	15,000 psi	
ADT100-NPTM4-M14FQ	Adapters, 1/4NPT male to M14x1.5 female	15,000 psi	
ADT100-NPTM4-M20FQ	Adapters, 1/4NPT male to M20x1.5 female	15,000 psi	

ADT103-BSP (Hand-tight quick connectors)

1/4BSP male to various hand-tight quick connectors (10 pcs, case included)



Additel 103-BSP

Model	Description	Max Pressure	Picture
ADT100-BSPM4-NPTF8Q	Adapter, 1/4BSP male to 1/8NPT female	15,000 psi	
ADT100-BSPM4-NPTF4Q	Adapter, 1/4BSP male to 1/4NPT female	15,000 psi	
ADT100-BSPM4-NPTF2Q	Adapter, 1/4BSP male to 1/2NPT female	15,000 psi	
ADT100-BSPM4-BSPF8Q	Adapters, 1/4BSP male to 1/8BSP female	15,000 psi	
ADT100-BSPM4-BSPF4Q	Adapters, 1/4BSP male to 1/4BSP female	15,000 psi	
ADT100-BSPM4-BSPF3Q	Adapters, 1/4BSP male to 3/8BSP female	15,000 psi	
ADT100-BSPM4-BSPF2Q	Adapters, 1/4BSP male to 1/2BSP female	15,000 psi	
ADT100-BSPM4-M10FQ	Adapters, 1/4BSP male to M10x1.0 female	15,000 psi	
ADT100-BSPM4-M14FQ	Adapters, 1/4BSP male to M14x1.5 female	15,000 psi	
ADT100-BSPM4-M20FQ	Adapters, 1/4BSP male to M20x1.5 female	15,000 psi	

ADT103-M20 (Hand-tight quick connectors)

M20x1.5 Male to various hand-tight quick connectors (10pcs, case included)



Additel 103-M20

Model	Description	Max Pressure	Picture
ADT100-M20M-NPTF8Q	Adapters, M20x1.5 Male to 1/8NPT female	15,000 psi	
ADT100-M20M-NPTF4Q	Adapters, M20x1.5 Male to 1/4NPT female	15,000 psi	
ADT100-M20M-NPTF2Q	Adapters, M20x1.5 Male to 1/2NPT female	15,000 psi	
ADT100-M20M-BSPF8Q	Adapters, M20x1.5 Male to 1/8BSP female	15,000 psi	
ADT100-M20M-BSPF4Q	Adapters, M20x1.5 Male to 1/4BSP female	15,000 psi	
ADT100-M20M-BSPF3Q	Adapters, M20x1.5 Male to 3/8BSP female	15,000 psi	
ADT100-M20M-BSPF2Q	Adapters, M20x1.5 Male to 1/2BSP female	15,000 psi	
ADT100-M20M-M10FQ	Adapters, M20x1.5 Male to M10x1.0 female	15,000 psi	
ADT100-M20M-M14FQ	Adapters, M20x1.5 Male to M14x1.5 female	15,000 psi	
ADT100-M20M-M20FQ	Adapters, M20x1.5 Male to M20x1.5 female	15,000 psi	

Don't need the entire kit? Order individual adapters with the above part numbers.

Pressure Manifold, Hoses, Adapters and Fittings

■ Additel 104 ■ Hose Test Kits

ADT104-HP

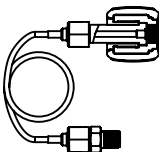
1/4HP male (Autoclave M-250-C) to various connectors as follows (17pcs, case included);
(Designed for Additel 949 pump)



Additel 104

Model	Description	Max Pressure	Picture
ADT100-HPM-M14F	Adapter, 1/4HP male to M14X1.5 female	37,500 psi	
ADT100-HPM-M20F	Adapter, 1/4HP male to M20X1.5 female	37,500 psi	
ADT100-HPM-BSPF4	Adapter, 1/4HP male to 1/4BSP female	37,500 psi	
ADT100-HPM-BSPF3	Adapter, 1/4HP male to 3/8BSP female	37,500 psi	
ADT100-HPM-BSPF2	Adapter, 1/4HP male to 1/2BSP female	37,500 psi	
ADT100-HPM-NPTF4	Adapter, 1/4HP male to 1/4NPT female	15,000 psi	
ADT100-HPM-NPTF2	Adapter, 1/4HP male to 1/2NPT female	15,000 psi	
ADT100-HPM-M14M	Adapter, 1/4HP male to M14X1.5 male	37,500 psi	
ADT100-HPM-M20M	Adapter, 1/4HP male to M20X1.5 male	37,500 psi	
ADT100-HPM-BSPM4	Adapter, 1/4HP male to 1/4BSP male	37,500 psi	
ADT100-HPM-BSPM3	Adapter, 1/4HP male to 3/8BSP male	37,500 psi	
ADT100-HPM-BSPM2	Adapter, 1/4HP male to 1/2BSP male	37,500 psi	
ADT100-HPM-NPTM4	Adapter, 1/4HP male to 1/4NPT male	15,000 psi	
ADT100-HPM-NPTM2	Adapter, 1/4HP male to 1/2NPT male	15,000 psi	
ADT100-HPM-HPM4	Adapter, 1/4HP male to 1/4HP male	37,500 psi	

Hose Test Kits

Model	Description	Max Pressure	Picture
ADT100-HTK-2	Hose Test Kit, 5 feet flexible hose, 1/4NPT male to 1/2NPT female hand tight quick connector	8,000 psi	
ADT100-HTK-4	Hose Test Kit, 5 feet flexible hose, 1/4NPT male to 1/4NPT female hand tight quick connector	8,000 psi	
ADT100-HTK-8	Hose Test Kit, 5 feet flexible hose, 1/4NPT male to 1/8NPT female hand tight quick connector	8,000 psi	
ADT100-HTK-B	Hose Test Kit, 5 feet flexible hose, 1/4NPT male to 1/4BSP female hand tight quick connector	8,000 psi	
ADT100-HTK-M	Hose Test Kit, 5 feet flexible hose, 1/4NPT male to M20X1.5 female hand tight quick connector	8,000 psi	

Don't need the entire kit? Order individual adapters with the above part numbers.

Software

Additel 95XX Series

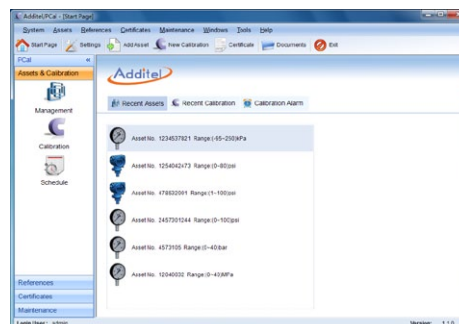


9506 Additel/PCal

The Additel PCal Pressure Calibration Software is used with the 681 pressure gauges, 672 calibrators, and any of the 9XX pumps.

Semi-automated calibration of pressure gauges, transmitters, transducers and other pressure devices can be performed.

Software can be used to manage reference standard instruments and devices under test, as well as generate and customize a calibration certificate.

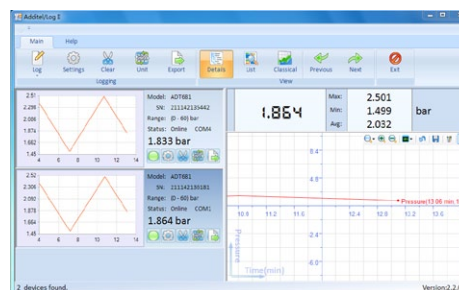


9502 Additel/Log II

Real-time data logging and graphical software for the 681 series digital pressure gauges and the 672 series digital pressure calibrators.

Additel/Log II lets you acquire data to your PC. You can choose to display the real-time pressure measurement data in a table or in a graph.

All measurement results can be easily saved into an excel file.



9510 Additel/Cal

Task management software for the 22XA series multifunction process calibrators and the 761 series automated pressure calibrators.

Additel/Cal was designed specifically for task management of temperature and pressure calibration.

The main features include establishing a database of all reference and test instruments, maintaining a customer database, creating, uploading and downloading calibration tasks, generating a calibration report, and customizing the calibration certificate.

Task ID	Task Name	Status	Start Date	End Date
1	Test_001_Pressure Transducer	Actual	2014-05-25	
2	Test_002_Pressure Transducer	Actual	2014-05-25	
3	Test_003_Pressure Transducer	Actual	2014-05-25	
4	Test_004_Pressure Transducer	Actual	2014-05-25	
5	Test_005_Pressure Transducer	Actual	2014-05-25	
6	Test_006_Pressure Transducer	Actual	2014-05-25	
7	Test_007_Pressure Transducer	Actual	2014-05-25	

NO.	RefPoint	RefInductance	TestInductance	Pressure	Inductance
1	0	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00
3	0.05	0.00	0.00	0.00	0.00
4	0.10	0.00	0.00	0.00	0.00
5	0.15	0.00	0.00	0.00	0.00

9500 Additel/Land

With Additel/Land software, you may download test results stored in the internal memory of Additel calibrators to a PC, and export the results to an excel file. It is a free software package and can be downloaded at www.additel.com.

Model	Serial Number	Firmware Version
AD7672	2731110023	V02.05
AD7761	8111020010C	APC V02.03
AD7233A	00000000	CHC V02.32



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